

Issued Every Month

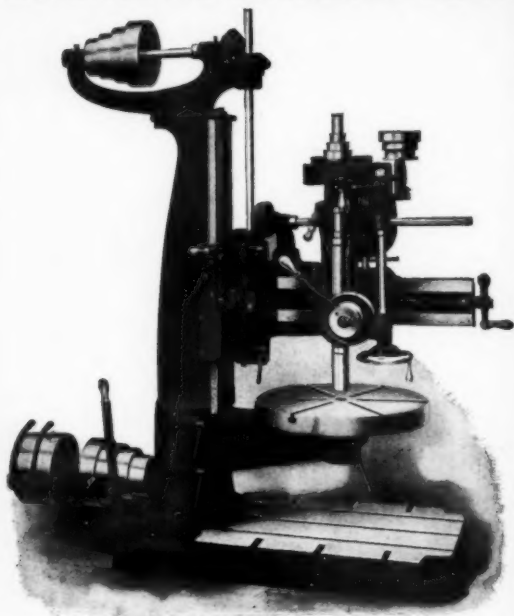
For Free Distribution to Users
of Machine Tools

HITCHCOCK'S MACHINE TOOL LIST

A Reference Book for Buyers
of Iron Working Machinery

Published by
A. H. Hitchcock
1220-1235 Caxton Building
Chicago

The Fosdick 2 Ft. National Radial

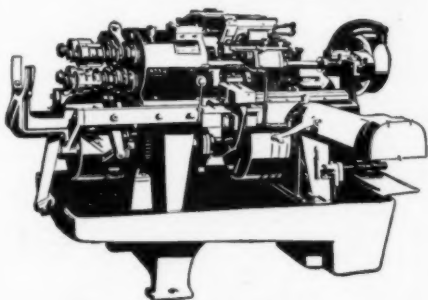


was put on the market to appeal to the conservative buyer. It is a machine designed with all the modern up-to-date features, leaving off all unnecessary "frills." It has steel gears and bronze bushings in all important places; ball bearing thrust collar on spindle; back gears located on the head. This machine can be furnished with or without tapping attachment, as desired.

Write for full description and prices. They will interest you.

The Fostick Machine Tool Co.
Cincinnati, Ohio

A REASON For Low Cost



On Each Piece

YOUR cost on small parts is largely up to your method—the rapidity with which you can complete the product.

By the ACME way all the tools work at the same time on four bars of stock. The long cuts are divided between two or more tools and the special operations are taken care of on the one machine without adding the usual time and cost of rehandling by ordinary methods.

The time for any piece on the ACME is the time for the longest single operation—or less. The parts are accurate and the cost on each piece is low.

May we show you how on your work?

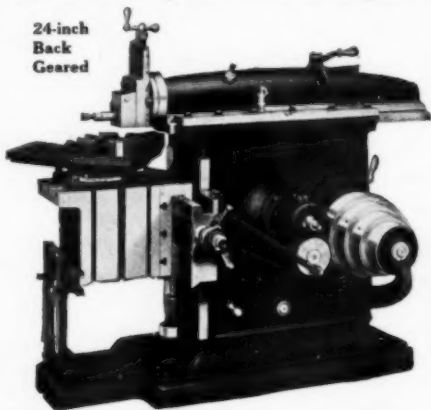
The National-Acme Mfg. Co.

CLEVELAND, SIXTH CITY

New York, Boston, Chicago, Detroit, Montreal, Atlanta

Queen City Crank Shapers

24-inch
Back
Geared



Exclusive Features

Worth \$50.00 to \$100.00

On Sizes 16, 20, 24 and 28-in. Stroke

11 Hardened and Ground Journals

8 Ring Oiling Bearings

Sight-feed Oilers on Ramways

Screw-top Oil Cups for

Crank Block Bearing

Ask your mechanical engineer what these exclusive Queen City features mean in *long life, power efficiency and freedom from bearing troubles*, and you will understand why the repeat orders and larger sales enable us to put this extra cost into our Shapers without increasing the price to you.

Of superior construction throughout. Write for full data.

Queen City Machine Tool Co.
Cincinnati, Ohio

The Cincinnati

Heavy Pattern Sliding Head

Upright Drilling and Tapping Machines



**With Patent
Positive Geared Feed**

We illustrate herewith one of our very latest machines, namely, our 21-inch Drill, fitted with Sliding Head, Friction Back Gear, Patent Positive Geared Feed, Automatic Stop and Quick return. This Machine can, if desired, be supplied with our Patent Geared Tapping attachment, Square

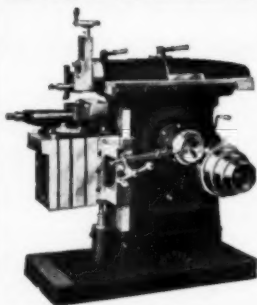
Table, Motor Drive, either belted or geared, arranged in gangs, or furnished with drilling plates, drill chucks, or vises, as

may be called for. These machines range in sizes from 20 to 42-inch, and are made in two distinct styles, one for the use of the ordinary drill, the other strictly for high speed drilling purposes.

The 1912 catalogue is ready for distribution

The Cincinnati Bickford Tool Co.
Oakley, Cincinnati, Ohio

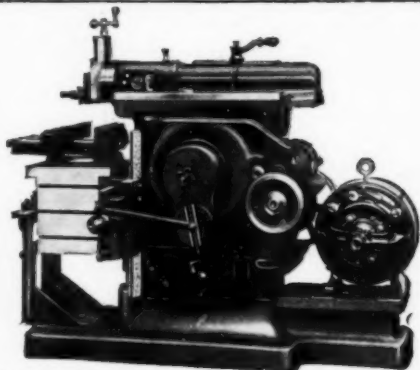
Economical-Rapid-Good



Results are what you want from a shaper. We can give them to you.

*Let us show you
the advantages
of our machine*

The John Steptoe Shaper Co.
Station B, Cincinnati, Ohio



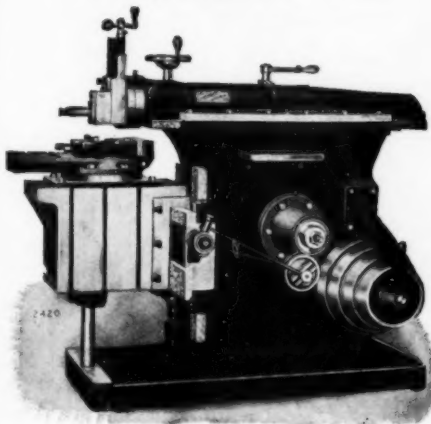
Stockbridge Patented Two-Piece-Crank Shapers operate with less power and greater production than regular crank shapers. "1911 Catalog."

STOCKBRIDGE MACHINE CO.,

Worcester, Mass.

A Shaper For Heavy Duty

Gives Big Results at Low Cost



24-inch, Back Geared

THE CINCINNATI has the gearing that makes it the most powerful shaper of its stroke on the market. It has the build that enables it to work up to maximum capacity day after day and year after year.

The accuracy of the work it turns out is of the kind that satisfies the painstaking die and tool maker. The many conveniences help to increase the capacity.

Our free Shaper Book gives details and pointers. Send for a copy today

The Cincinnati Shaper Co.

Colerain Ave. & Elm St., CINCINNATI, OHIO



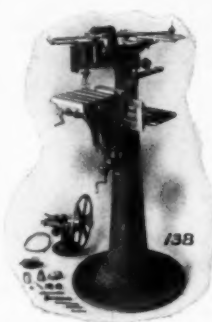
FREE

We have gathered from a variety of sources a lot of interesting and useful information about Keyseating, covering the best American practice in handling this work, which we have arranged in a little 32-page booklet, of which a reduced facsimile of the title page is shown above. It treats the subject more fully than any engineering publication we know of, and both tables and text will prove helpful to any one who does Keyseating, whether little or much.

*Mailed free for the asking, which lays you under no obligation.
We want you to have one, and shall send it gladly.*

The W. P. Davis Machine Co.
Rochester, N. Y.

S'pose You Let Us Engrave A Few Pieces



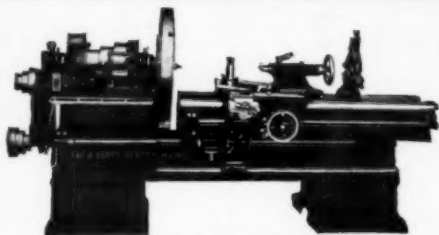
for you, just to show the work of our Engraving Machine?

We will make no charge and we'll tell you how long it took, so you can make some comparisons of cost and results. We'll tell you at the same time where 500 of these machines have gone and give you a chance to correspond with user.

This machine engraves most anything and everything, you know, on metal or other material, always cheaper and always better than can be done by hand.

USED FOR Dies, Moulds, Tire Moulds, Tools, Instruments, Printing Wheels, Label Plates, Telephone Work, Matrix Work, etc., and in Navy Yards and Arsenals. Two Sizes, Five Styles, for all kinds of Flat and Spherical Surfaces.

Geo. Gorton Machine Co.
Racine, Wis., U. S. A.



16-32 Extension Gap Lathe

This Lathe fills the gap between a 16 and 32 in. Takes care of all diameters between above sizes. Besides the gap, there is the extra distance between centers; 7 feet on 8-foot Lathe obtained.

The Bed is moved by power, taken from the feed rod.

Catalog.

FAY & SCOTT, - Dexter, Maine

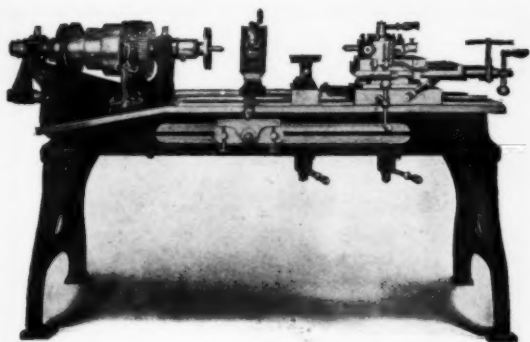
You Win



**15-inch
With Patent
Instantaneous
Change Gear device**

While building a reputation, we have to build a better lathe for the price than our older competitors. That's where you win. For description and prices of 15-in. and 16-in. high-grade Lathes, write to—

Von Wyck Machine Tool Co., Cincinnati, Ohio



A Brass Finisher's Lathe

That Will Last For

FORTY YEARS

and continue to produce the

QUALITY AND QUANTITY

of a new Lathe, must be

A GOOD TOOL

TO BUY

Made By

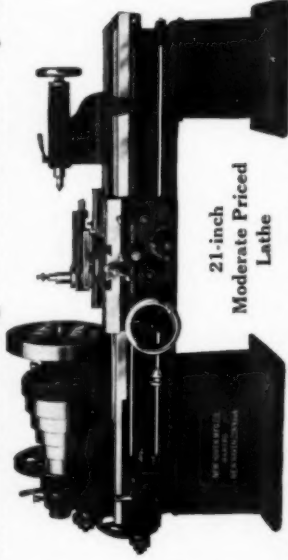
The American Tool & Machine Co.

Incorporated 1864 :: :: BOSTON

Training Season Unnecessary for New Havens

They are built to score big results from the very first day

New Haven
Standard
Lathes
are made
18, 21, 24
and 28-in.
swing



New Haven
Improved
Engine Lathes
are made
from 24
to 65-in.
swing

YOU GET satisfactory work at the start, and every day thereafter, because the New Havens are carefully built and adjusted, and they get down to business like seasoned veterans. The essence of 60 years' experience is put into each lathe by skilled mechanics. That's why we back every machine with our guaranty.

We can fill your requirements at a price within your means

NEW HAVEN MANUFACTURING CO., - NEW HAVEN, CONN.



Champion Engine Lathes

Are a guarantee to the user of the best possible range of Lathe Work. In these tools you will find both stability and convenience worked out to a high degree of perfection and in the simplest form. Nothing complicated.

Sizes 10, 12, 14, 16 and 18 inch, Quick Change or New Standard type, all attachments, and Motor or Counter-shaft Drive.

Champion Tool Works Co.,
2426 Spring Grove Ave., Cincinnati, Ohio, U. S. A.



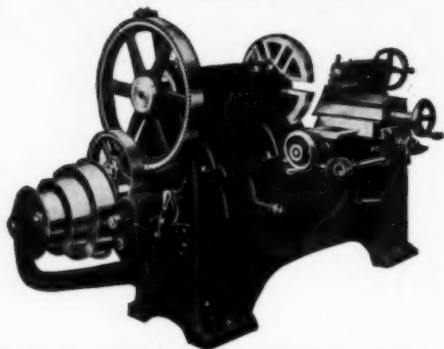
All owners and operators of Cincinnati Lathes

have confidence in their mechanism. A feeling of security against any sort of trouble adds to your profit and heightens his enjoyment. With our **Quick Change Feed Box** all standard threads are cut without duplicating or removing a gear.

Send for more details.

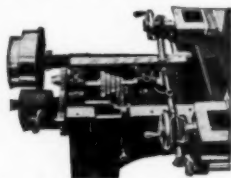
The Cincinnati Lathe & Tool Co.
Oakley, Cincinnati, Ohio

The Cincinnati High Duty 20 inch Pulley Lathe



A Strictly Modern Tool Built for Service
Every Feature Designed to Save Time

**Fast
Cutting
and
Easily
Operated.**



**Extremely
Rigid,
Insuring
Accurate
Work.**

Capacity, Pulleys 20" diameter, 24" face.

Quick Change Gears and Gear Box give 12 changes of feed.

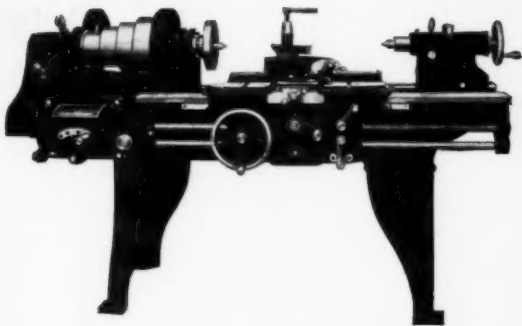
Ratio of finest to coarsest 1 to 16, permitting a variety of feeds to suit any roughing and finishing.

Six changes of speed which, with the heavy gearing, allows heavy and fast cutting.

Tools operated from both sides of the machine.

Swiveling Table—instantly adjusted for crowning.

The Cincinnati Pulley Machinery Co.
Cincinnati, Ohio



Turning Shouldered Work

Go through your shop and watch the operators turning shouldered work on the lathes in your equipment. The last eighth of an inch is fed by hand, because the operator is not sure just where he will be able to disengage the old-fashioned revolving knurl.

In MORRIS lathes the feeds are engaged by a simple easy motion of a stationary lever, and disengaged by the same easy movement. This enables the operator to stop the feed exactly at the desired point, and thus eliminates the loss of time incident to feeding up to the shoulder by hand.

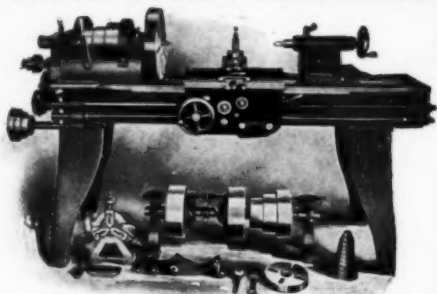
There are other cost reducing features on these lathes that you cannot afford to be without.

They are built in standard and quick change with single or double friction back gears.

Write for details. The price will surprise you.

The John B. Morris Machine Tool Co.
Cincinnati, Ohio

Monarch Lathes

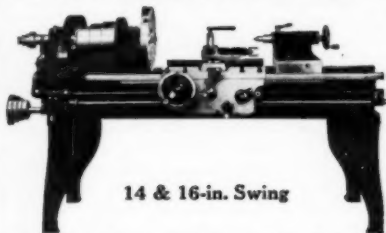


14-16-18-inch. Single and Double Back Gear.
Superior quality at moderate prices.

Circular by return mail

Monarch Machine Co., Sidney, O.

WHEN CHOOSING A LATHE—study



14 & 16-in. Swing

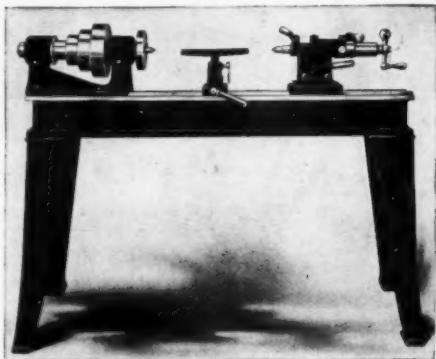
FIRST-
the
work
to
be
done
THEN-
the
cost
of
invest-
ment.

Conover-Overkamp Lathes will handle lathe work with Accuracy and Rapidity. They are built and designed for Rigidity-Accuracy-Simplicity—three important features.

Let us send descriptive circulars and quotations

The Conover-Overkamp Machine & Tool Co.
840 Germantown St., Dayton, Ohio, U. S. A.

Blount Speed Lathes



These lathes are built in three sizes, 11, 13, and 16-inch swing, with crossed-braced beds, from 3 to 12 feet long.

The spindles are made from crucible steel, are hollow, and fitted with Morse Taper, run in long, self-oiling, dust proof bronze bearings.

The cone pulleys have four steps, and are carefully turned and balanced for running at high speed.

The tailstocks are the Blount Patented, spindles having combination screw and lever feed, with all binding handles conveniently situated above the ways of the lathe.

1912 Catalogue sent upon request

Manufactured by

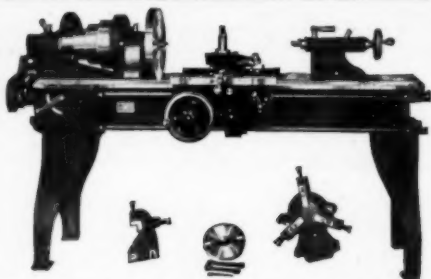
J. G. Blount Co.

Everett,

-

-

Mass.



"Economy" 14-Inch Modern Engine Lathe

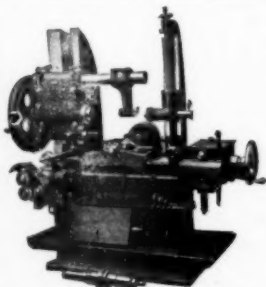
Rigid and powerful, with deep-section cross-braced bed, massive headstock, extra large bearings, 48 feed changes, and of advanced design and construction throughout. Adapted to an unusually wide range of work.

Write for special circular.

ROCKFORD LATHE & DRILL CO., - Rockford, Ill.

Newark Gear Cutting Machine

For Cutting Gears for All purposes



Entirely automatic in operation.

Has accurate indexing mechanism.

Simple in construction.

Made in all sizes, for all classes of gear work.

Send for 1912 Catalog

Newark Gear Cutting Machine Co.

70 Union St., Newark, N. J.

MOTOR DRIVE FOR MACHINE TOOLS



Automatic Starting Control

The automatic control of the starting and stopping of motors used for the individual drive of machine tools is most desirable, not only because of the elimination of all abuse to the motor or start-

ing equipment, but also because of the saving in space and all unnecessary wiring on and around the machine tool.

With the Reliance Adjustable Speed Motor of the armature shifting type, simple automatic starters may be used which take care of any starting condition. The only act necessary on the part of the operator is the pressing of a button or the throwing of a switch. The motor is always brought up to speed in the shortest safe time and there can be no blowing of fuses, flashing of brushes, or damaged motors and starters.

With these starters it is possible to use a powerful dynamic brake causing quick stopping of the motor and spindle of the driven machine. This is a big time saver in calipering work, changing tools, or setting up new work.

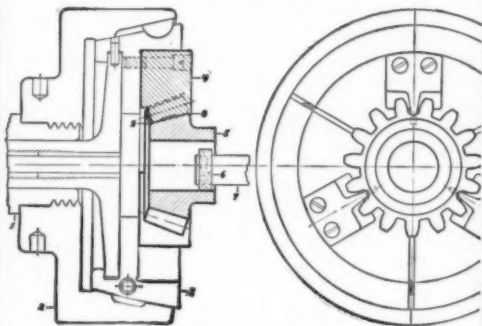
Our Bulletin 7010 takes up in detail the question of automatic starting control for machine tool drive. We shall be glad to send you a copy.

RELIANCE ELECTRIC & ENGINEERING CO.
1050 IVANHOE RD • CLEVELAND, O.

HINTS

On Internal Grinding

Finishing the Hole in a Hardened Bevel Pinion



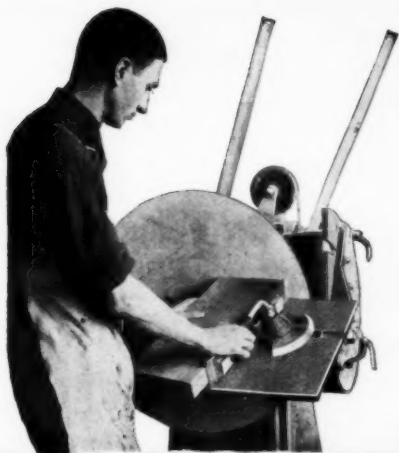
The "Root Control" method of holding gears works out nicely in holding bevel pinions as well as spur gears, as will readily be seen by the above cut.

In this case the collet jaws are made with their contact faces on a bevel to fit the conical shape of the pinion at the bottom of the tooth spaces, and the outer edges of the jaws are left slightly longer, so they will overhand the edge of the pinion as shown at 8; this will hold the gear from sliding out when closing the collet, and form a very efficient device.

Our No. 75 Internal Grinding Machine fitted with a collet chuck is the machine for this class of work.

Our book, "Practical Hints On Internal Grinding" tells all about "Root Control" and "Pitch Line Control" and other things you want to know about. It's FREE on request.

The Heald Machine Co.
Worcester, Mass. 6 New Bond St.



How Long Would It Take You To Produce This Compound Angle?

It took this operator—on a Gardner Patternmaker's Disc Grinder, 5 seconds! And what's more, it is done right.

Gardner Patternmaker's Disc Grinders have revolutionized the patternmaking industry.

Knots, cross grains, end grains, hard or soft woods and even projecting nails or screws can be worked with absolutely no difficulty.

These machines do away with the Trimmer, take a large portion of Lathe, Band Saw, Jointer and Drum Sander work; hand planing and sanding is reduced more than half.

A ground surface makes a better glue joint than is possible to obtain by any other method.

These machines are also used in metal pattern making.

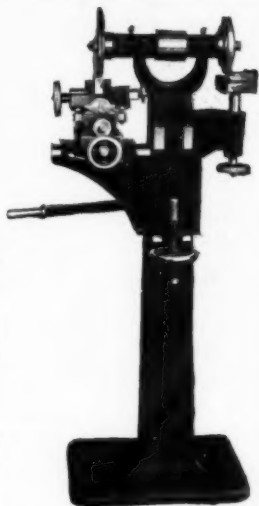
Made in Various Types and Sizes

Get our new 10-page folder covering this machine

Gardner Machine Company

BELOIT, WISCONSIN
The Disc Grinding Authorities

The Geometric Chaser or Die Grinder



Is a necessity where much screw-cutting is done.

It keeps Chasers in perfect condition, grinding each set uniformly, so that they are all and always ready for turning out perfect threads.

The **Geometric** will take care of any make of thread chaser, stock or special. A second grinding wheel fits it for ordinary tool grinding.

*Let us send you our Booklet
describing this Chaser Grinder.*

The Geometric Tool Company
New Haven, Conn.



Ransom Motor Driven Grinder

With Patent Speed Controller

The speed regulator keeps the periphery speed constant as the emery wheel wears down, and insures maximum grinding efficiency on wheels of different diameters.

These machines are made in all sizes, are massive in construction, and have the weight and floor area to prevent vibration.

Our Bulletin No. 9 shows different sizes

Ransom Manufacturing Co.
Oshkosh, Wis.

Besly Patternmakers' Disc Grinder

(PATENTED)

The most useful and necessary tool in the
modern pattern shop

With this machine an apprentice boy can do much work which heretofore had to be done by the most skilled workman.

In addition to doing work quicker than by other methods, the grinder produces straighter, flatter surfaces, better glue joints, more accurate angles and dimensions as well as better finish. Ground surfaces make the best glue joints known for wood patterns.

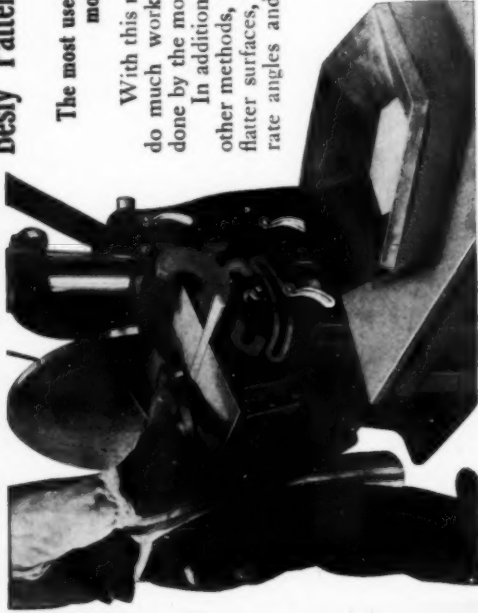
**Made Single or Double End
Belt or Motor Driven**

24, 30 or 40-in. Diameter Disc Wheels

Ask for our "Pattern Making Pamphlet"

Chas. H. Besly & Co.

CHICAGO, U. S. A.



4 IN 1

Cylindrical
Internal
Surface
Cutter and
Reamer
Grinding of
all description

Done on a
**Bath Universal
Grinder**

A machine that cuts the first cost in four, saves floor space and puts commercial and tool room grinding on a profitable basis, whether produced in large or small quantities.



Arranged for Cylindrical Grinding

Bath Grinder Co.

75 Walnut St.,

Fitchburg, Mass.

No. 55 Floor Grinder

With Cabinet Base



This is a high grade Emery Grinder—a real machine tool, with every part accurately finished and absolutely interchangeable. The spindle is of tough steel, lathe turned and threaded. Collars are forced on and turned slightly concave, and nuts are carefully faced so they will not spring the shaft. It has long bearings, babbitted, self-oiling with double rings, and dust-capped. Oil reservoir is filled from the side, which prevents emery dust from reaching the bearings.

Let us figure with you on your needs in well-made, practical emery grinders. With this style in three sizes, and a line of smaller bench or column grinders, I can give you what you want at reasonable prices.

E. O. PARTRIDGE, 2047-9 Lake St., Chicago
Also Foot Presses and Tapping Machines

YOU

1. Can save $\frac{3}{8}$ to $\frac{1}{2}$ of your cost of drills.
2. Can materially increase speed of drilling work and improve quality.
3. Can change drill grinding from a foreman's to a "kids" job—

By Installing a Drill Grinder

any good make will give these results

BUT

If you want to save time in grinding—want to remove the objection the men sometimes make to "Drill Grinders" on account of setting for each size—want to make teaching the "Kid" easier, etc.,

You Will Simply Have To

Buy A "New Yankee"

It Wont Cost More Either

This little style "L" is just suited to the smallest sizes. It takes from No. 60 to $\frac{5}{8}$ in. drills. Others take up to 5 in.—wet or dry—belt or electric, etc.



Get the complete Grinding Machinery Catalog, illustrating also our Surfacers, Tool Grinders, Cutter Grinders, etc.

Wilmarth & Morman Co.

575 Canal St., Grand Rapids, Mich.

Drilling or Milling—Which?

If you are using **higher speeds** than we give below, you are not operating your machine to your best advantage. **Feed** is more important than **Speed**. To illustrate—

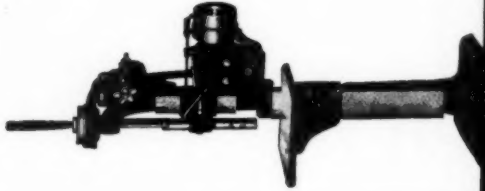


Chips made driving $\frac{3}{4}$ in. High Speed Drill in Cast Iron with .030 feed, with spindle speed of 500 r. p. m.

Chips made driving $\frac{3}{4}$ in. High Speed Drill in Machinery Steel with .025 feed at spindle speed of 370 r. p. m.

Your **Drill Manufacturer** will tell you that **High Speed and Light Feed** will ruin the **Best Drills** they can make.

We claim the **Speeds and Feeds** given in this chart will insure your getting a **Maximum** output at a **Minimum** cost.



Illustrated in Series with all **Machines** you are now using. You

SIZE

DRILL PRESS

AT 1 - 20.

Ins. Per Rev. Ins. Per Min.

Ins. Per Rev. Ins. Per Min.

We claim the **Speeds and Feeds** given in this chart with the **Machines** you are now using, you get a **Maximum** output at a **Minimum** cost.

9 Roller Bearings
2 Ball Thrusts for
each spindle.

CAPACITY:

$\frac{3}{4}$ in. Drill
12 in. per minute
in Cast Iron.

Size	Ins. Per Rev.	Ins. Per Min.	H. P. M.		Ins. Per Rev.	Ins. Per Min.
$\frac{1}{8}$	.006 to .010	15 to 25	2500	2400	.006 to .009	14 to 21
$\frac{1}{4}$	.008 to .012	16 to 24	2000	1600	.006 to .009	10 to 15
$\frac{3}{8}$	.010 to .015	15 to 23	1500	1200	.008 to .012	9 to 14
$\frac{1}{2}$	.012 to .020	12 to 20	1000	800	.008 to .012	6 to 9
$\frac{5}{8}$	.015 to .025	11 to 19	750	600	.010 to .015	6 to 9
$\frac{3}{4}$	.018 to .030	9 to 15	600	500	.010 to .015	5 to 8
$\frac{7}{8}$	.018 to .030	9 to 15	500	400	.010 to .020	4 to 7
$1\frac{1}{4}$	.018 to .030	8 to 13	440	350	.010 to .020	3 to 7
$1\frac{1}{2}$	.018 to .030	7 to 11	380	300	.010 to .020	3 to 6
$1\frac{3}{4}$	.020 to .030	7 to 11	340	270	.015 to .020	4 to $5\frac{1}{2}$
2	.020 to .030	6 to 9	300	240	.015 to .020	$3\frac{1}{2}$ to 5

Speed Range Selective. The machine will work equally well with a tight and loose pulley speed as low as 300 r. p. m., giving spindle speeds of 270-480-600 and 990, or with a tight and loose pulley speed as high as 800 r. p. m., giving spindle speeds of 720-1280-1600 and 2645. The speed range of this machine is such as to meet all requirements under every commercial condition.

This is a 16 in. **High Speed, Sensitive, Vertical Drilling Machine** with a capacity for drilling in cast iron, brass, aluminum, malleable or steel up to the limit of **High Speed** drills $\frac{3}{4}$ in. and smaller. The machine is built in either one, two, three, four, five or six spindles.

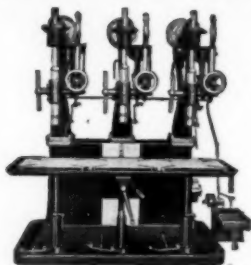
Write to-day for Catalogue

Cable Address:
KOKODRILL—U. S. A.

Codes Used:
LIEBER'S, A. B. C., WESTERN UNION

Superior Machine Tool Co.
Kokomo, Indiana, U. S. A.

Rockford Gangs



They not only drill, but they bore, ream, tap and face without removing work from jig.

Write for descriptive matter

Rockford Drilling Machine Company
Rockford, Ill., U. S. A.

Silver's 20" Drills

Eight Styles

LEVER FEED

LEVER and WHEEL FEED

POWER FEED and Automatic Stop

POWER FEED with Back Gears and Automatic Stop

Round or Square Base

Send for catalog

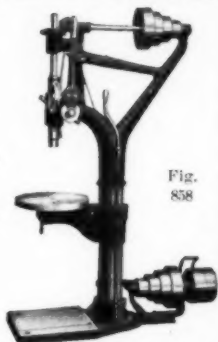
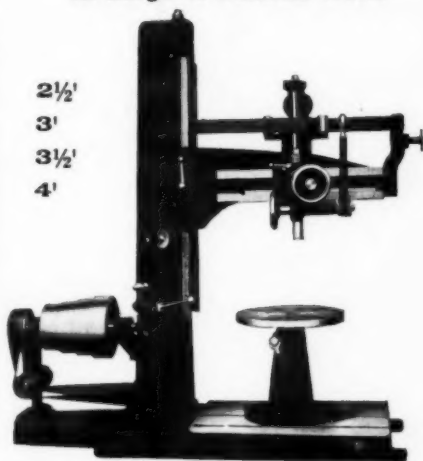


Fig.
858

The Silver Mfg. Co., 385 Broadway
SALEM, OHIO

Speedy-Belted-Sensitive
Annular-Ball-Bearing Radial

For Drilling $\frac{1}{4}$ -in. to 1-in. Holes
In Large or Difficult Work



GETS READY quickly; all adjustments easy, quick and positive; often saves clamping. Clearance between spindle and base, 11 to 51 inches.

DRILLS fast—driving, for example, a $\frac{1}{2}$ -in. high-speed drill, at 900 r. p. m., through 2-in. cast iron in five seconds. Spindle speeds, 300 to 1170 r. p. m.

TAPS up to $\frac{3}{4}$ -in.; reverses instantly, without shock or jar, at high speed, and is practically noiseless.

A universal small-hole economizer. Write to

The William E. Gang Co.
Cincinnati, Ohio

Look Here, Please!

A Sensitive Drill With Six Spindle Speeds

from 600 to 2,400, with ample power for $\frac{1}{2}$ -inch drills
and plenty of speed for the smallest drills.



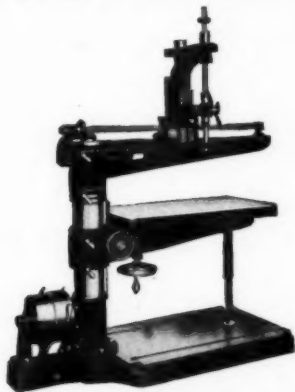
**Net
Price,
Only
\$50.**

If your Dealer doesn't have them, write us

Reed Drill Company
43 Hammond St., Worcester, Mass.

Small Holes

**Are Often Hard to Get at with
A High-Speed Drilling Machine**



Our High-Speed Radial Solves the Problem

It combines the flexibility of the radial with the efficiency of the sensitive in drilling holes up to $\frac{3}{4}$ -in.

It affords the greatest economy in drilling small holes in pieces that are too large or too heavy to handle to advantage on a vertical.

Although rigid in construction, it is the lightest drilling machine of its type, easiest to handle and quickest to adjust—therefore, the greatest saver of time.

*Write for details on the economical
way to drill small holes in large work*

The Taylor & Fenn Company
Hartford, Conn.

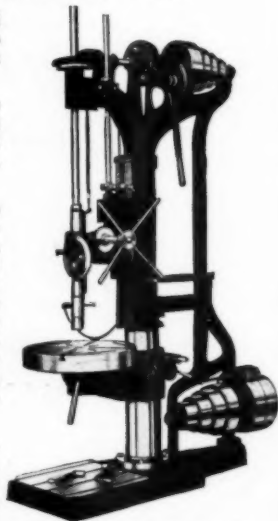
High Speed 14 to 44-in. Upright Drills Of Extra Heavy Design At a Moderate Price

QUALITY and price generally go hand in hand—but not always.

Our overhead costs are light, and skilled mechanics can live in our little city at a moderate figure.

We have built up an organization of expert workmen, in a factory equipped with modern tools, that enables us to produce high-grade drills that are unequalled for their cost of production and their price to you.

They are well finished and fitted throughout, they cover a wide range of work, are modern in every detail, with back gears, positive geared feed, automatic stop, geared tapping attachment, and with the conveniences and time-saving devices of strictly up-to-date tools. Belt or motor drive.



This type, 24 to 44-in.

Write for full description and prices.

The Aurora Tool Works Co.
Aurora, Ind.

\$55.00

F.O.B. Kokomo, Ind.



\$55.00

F.O.B. Kokomo, Ind.

20" Square Base, Wheel & Lever Feed

We have on hand for immediate delivery a number of Superior 20" Square Base, wheel and lever feed upright drill presses as illustrated, that have always sold at price of \$65.00 f.o.b. Kokomo, Ind.

We are redesigning this machine, making some changes in our patterns in order to build the new machine with power feed, and back gears, and do not care to mix our stock by having on hand the same size machine in two different designs.

These machines are high grade, carefully built and equal to other machines of the same size, and are guaranteed by us the same as if sold at our regular price.

We will ship to concerns satisfactorily rated on regular terms of 30 days net; and to those that send cash with order we allow an extra 2%. We agree to refund your money if not entirely satisfied.

If you can use one of these machines you better order at once, as our supply is limited.

*Handsome catalogue illustrating our complete line,
20 to 36 inch inclusive, upon request.*

Superior Machine Tool Co.
Kokomo, Indiana, U. S. A.



Valuable Chart Free

Cost Several Thousand Dollars

Yours For The Asking

Shows the operator at a glance just what speed and feed he should use to get maximum results with any drill in any metal.

The table is the product of experiments extending over two years, by a specially appointed committee, who exhaustively tested various sizes of drills and drilling machines in one of the largest factories in America.

The results is undoubtedly the most accurate chart of feeds and speeds for drilling ever produced. It is indispensable to every user of modern drilling machinery.

Ask for one; we send it post free with our compliments

As any variation of temper or consistency in metals to be drilled, or any improper condition of the drill itself, necessarily varies the speeds and feeds suitable for the work, the chart must be considered as a table of ideal conditions to work down from, instead of working up from a guess, as usual.

To obtain the most efficient results from the use of the table, it is absolutely necessary to use a Frictionless, Ball Bearing Machine, as the loss of power in any other machine would more than offset the gain in efficiency from proper use of feeds and speeds.

The Henry & Wright Frictionless Ball Bearing Drilling Machines were adopted by the company in whose factory the chart was worked out, after the tests for tables were made.

The chart is mailed in the form of a hanger 11x17½ inches in size, with plain, easily read figures as shown. Don't fail to write for one, using your letter head, and saying that you saw this offer in Hitchcock's Machine Tool List.

The hanger will be sent without cost or obligation

The Henry & Wright Mfg. Co.

99-107 Sheldon St., Hartford, Conn.

Speeds And Feeds For Drilling

Compliments Of The Henry & Wright Manufacturing Company, Hartford, Conn.

Carbon Steel Drills



This table of feeds and feeds used obtained by a special commission working for some time years looking out various sorts of feeds at various feeds and feeds, to determine the most efficient feed and speed at which they should be given.

These speeds are so much higher than have been recommended heretofore, that it becomes necessary to use the modern machines of the HUBBY & WRIGHT type to dress them with safety to the machine, and economy in the use of power.

The fact of Henry & Wright Patented that Boring, Drilling Machine in operation during that is, holes up to 1/2" diameter and in this field they are not only efficient and accurate.

These most important features are the full bearings, front German balls and ground race. Patent Litter Sticking System, balanced squalls drive, Patent Sticking Patent Litter, heavy, rigid frame construction and speed, security.

We guarantee that they will do 2 to 4 times as much work as any plant testing machines designed for the same purpose using the same amount of power.

For full particulars address:

Henry B. Wright Mfg. Co.
Hartford, Conn.



SIZE OF DRILL	FEED PER REV.	BRASS	IRON	HARD	MILD STEEL	DROP FORG. STEEL	AL. TOOL	IRON CAST	STEEL CAST
		150 FT.	85 FT.	40 FT.	60 FT.	30 FT.	45 FT.	30 FT.	20 FT.
1/16	.003	5185	2440	3660	1830	2745	1830	1220	
1/8	.004	4575	2593	1220	1830	915	1375	915	610
3/16	.005	3965	2183	1015	1520	760	1135	760	407
1/4	.006	3355	1873	810	1215	610	915	610	305
5/16	.007	2745	1563	605	910	455	660	455	245
3/8	.008	2135	1253	400	705	300	505	300	205
7/16	.009	1525	943	295	500	245	392	245	174
1/2	.010	1315	833	245	450	200	343	200	153
5/8	.011	1105	723	195	395	165	293	165	122
3/4	.012	762	432	204	305	153	212	153	102
7/8	.013	654	371	175	262	131	196	131	87
1"	.014	571	321	155	229	117	171	117	77
1 1/4	.016	459	261	128	183	91	131	92	61
1 1/2	.016	381	216	102	153	77	106	77	51
1 3/4	.016	327	186	88	131	66	96	66	44
2"	.016	286	162	87	115	58	86	58	39

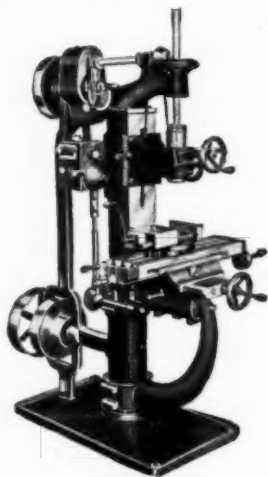
**Any Speed Recommended in These Tables Can Be Secured Economically
On The Heavy & Light Patented Ball Bearing Drilling Machines**

High Speed Drills

SIZE FEED	BRASS	CARBON	IRON	STEEL	DROP	MAL.	STEEL	CASH
PER OF	SWELL	REV.	300 FT	90 FT	80 FT	120 FT	90 FT	80 FT
	B.P.M.	B.P.M.	B.P.M.	B.P.M.	B.P.M.	B.P.M.	B.P.M.	B.P.M.
1/16	003		4880		3660		3660	2440
1/8	004		5185	2440	3660	1830	2745	1830 1220
3/16	005		5612	2610	3660	1010	3660	1220 807
1/4	006	3660	2074	1220	3660	1015	1315	915 610
5/16	007	3660	2074	978	1464	732	1138	732 490
3/8	008	3050	1728	813	1220	610	915	610 407
7/16	009	2614		610		510	732	510 348
1/2	010	2287	56	610		510	610	458 305
5/8	011	1830	1637	488	732	366	366	366 245
3/4	012	1525	884	407	610	305	458	305 203
7/8	013	1287	641	366	510	261	366	261 174
1	014		488		4	228	349	19 153
1 1/4	016	115	519	24	366	183	275	183 122
1 1/2	016	762	432	204	305	153	212	153 102
1 3/4	016	654	371	175	262	131	196	131 87
2	016	571	323	153	229	115	172	115 77

First:—Convenience

There's more to the No. 2 Knight, of course,
but convenience sticks out all over it—*First*



MILLING, Boring and Drilling at almost any angle with only one setting of the work is a convenience that inevitably lowers expensive tool room work. The Knight is a well built machine that does fast, accurate work on hard machining of all kinds, including dies, jigs, moulds, metal patterns, etc.

Our circular gives interesting hints

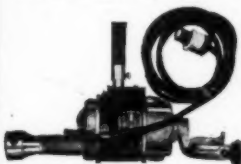
W. B. Knight Machinery Co.
St. Louis, Mo.

Nos. 1 & 1½ are Lighter Machines of Equal Convenience

Air Cooled Drills

Are Best by Test

In a contest in New York by manufacturers of electrical drills, not a U. S. Drill "smoked" under severe conditions. They showed that they were "best by test." Send for Bulletin describing this test.



Seven Sizes

To Bore in Steel

3-16, $\frac{1}{8}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{5}{16}$, $\frac{3}{8}$, 1 and $1\frac{1}{4}$ inch. They are made for either alternating or direct current, and are dependable tools that we guarantee will give you satisfaction.

U. S. Center Grinders

Save Time and Labor

Air Cooled

Made in four sizes

1-4, 1-2, 1 and
2 h. p.

Emery wheels $4\frac{1}{2}$ to
12 in. diam.

For grinding centers, reamers, cutters and dies; can be used in lathe, planer, shaper, or milling machine.

Bearings adjustable to wear and dust proof.



We are manufacturers of the largest line of Portable Electric Tools is the world. Write for latest Catalog. Will send any tool on trial and pay express charges if not satisfactory.

*Made for alternating or direct current
Just attach it to your nearest lamp socket*

The United States Electrical Tool Co.
Cincinnati, Ohio

A Portable Electric Grinder

That's Absolutely Universal

Full Universal—With even a wider scope than stationary universals.

Adjustments—Up-and-down and angle; equally efficient at any angle.

Capacity—Removes .006 in. on average work, and finishes to .0001 in.

Variable Speed—Adds neither weight nor complication, and adjusts instantly to any speed between 3,400 and 4,800 r. p. m.

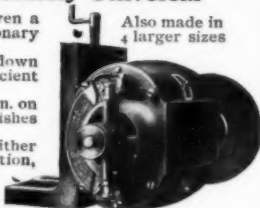
No Overheating on a continuous run at any load.

Write for Catalog, which shows several interesting operations.

It also describes our Variable Speed Electric Screw-driver, which does the work of six men.

The Smith Electric Tool Co.

Cincinnati, Ohio



Also made in
4 larger sizes



Elastic Rotary Blow Riveter

"It's a Dandy"

and has paid for itself in two months, is the report of a Cutlery Manufacturer. Makes a tight joint, or rivets lightly to swivel. **Every** head perfect shape.

Let us show what it will do for you?

The F. B. Shuster Co.

New Haven, Conn.

Formerly John Adt & Son

Established 1866

Straighteners and Cutters for Rounds, Squares, Hexagons, Strip Stocks, Flats, etc. Special Automatic Machinery.

**It takes 6 big strong husky men ten hours
to accomplish what a boy can do on a
Grant Noiseless Riveter in the same time.**



A boy or girl—inexperienced—can do *perfect* tight or loose riveting—a rivethead a second.

The Grant is absolutely noiseless—costs practically nothing for repairs.

Uniformity is a feature—no hammer marks or upset shanks.

Rivets are *spun* on—no hammering—giving a superior finish and perfection to the work.

We'd be glad to rivet a sample for you—you'll see just how good work the Grant can do.

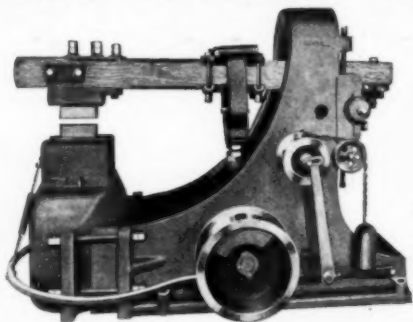
The Grant Mfg. & Machine Co.

C. E. Station
Bridgeport, Conn.,
U. S. A.

AGENTS—Strong, Carlisle & Hammond Co., Cleveland, Ohio, and Detroit, Mich. Thos. Crowther & Co., 170 Oliver St., Boston, Mass. Marshall & Huschart Machinery Co., 45 So. Capitol Avenue, Indianapolis, Ind. Baird Machinery Co., Pittsburg, Pa. The W. E. Shipley Machinery Co., Bourse Building, Philadelphia, Pa.

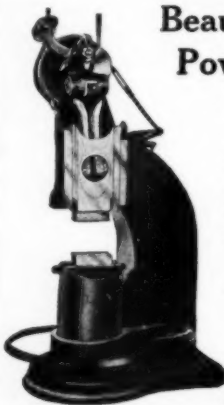
"Rochester" Helve Hammer

**Six Sizes
Two Types**



THE WEST TIRE SETTER COMPANY
Rochester, New York

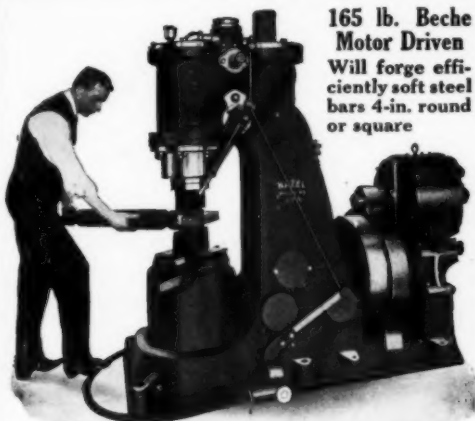
Beaudry Champion Power Hammers



Occupy small floor space;
will handle varying thick-
nesses of stock without re-
adjusting; quick and direct
acting and always under
perfect control.

*New Catalogue just out
Ask for it*

Beaudry & Co., Inc.
Oliver Bldg. Boston, Mass.



**165 lb. Beche
Motor Driven
Will forge effi-
ciently soft steel
bars 4-in. round
or square**

The Heaviest, Most Powerful, Efficient and Economical Hammer of Its Size on the Market

What a user of a 165 lb. Beche since Oct. 1909 has to say about it:

"Referring to your favor of the 15th inst., we beg to say that we have not had any very heavy work for the hammer, but what work we have it is doing very satisfactorily. The maintenance cost has been practically nothing up to date. We can do straight hammering on stock $5\frac{1}{2}$ in. diameter and work it down. This is about the limit. Trusting this will give you the desired information, we beg to remain."

Name supplied upon request.

The Beche costs less than the ordinary power hammers of same capacity and efficiency.

Built in six sizes.

Belt or motor drive.

Send for new catalogue.

Nazel Engineering & Machine Wks.

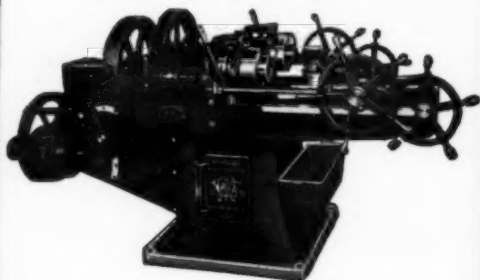
Sole Builders for United States and Canada

5th & Luzerne Sts.,

Philadelphia, Pa.

The "Standard"

**A Double Bolt-Cutter With Quick Change Gears
and Constant Speed Motor Drive**



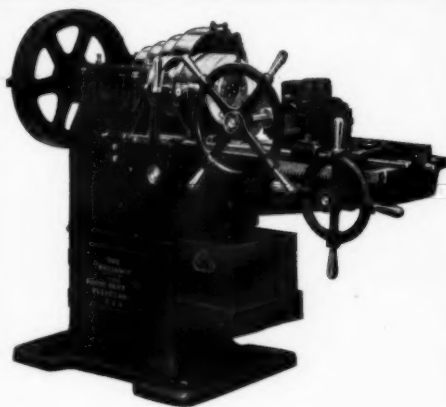
***Designed to Increase Capacities and
Reduce Production Costs***

It takes a massive, well-designed and carefully constructed tool to accomplish this purpose, and the fact that this machine does accomplish it in every plant in which it has been installed, demonstrates an efficiency that no user of bolt machinery can afford to overlook. The operator never has to guess at the size or length, for the machine takes care of both automatically, and shows all the time whether it is cutting exact size, or under or over, so that mistakes are entirely eliminated.

Where quality and quantity of output are prime essentials, as in government and railroad shops, the "Standard" holds first place

**Let us demonstrate its money saving
and money making capabilities.**

Universal Machine Co.
Enterprise St., Bowling Green, Ohio

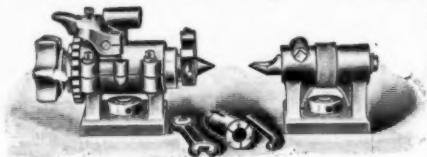


Reliance Bolt Cutters

Built in sizes $\frac{3}{4}$ inch to 6 inches, Single, Double and Triple, of the most up-to-date design. There is, also, a good reason why the "Reliance" is such a satisfactory machine for accuracy of threads cut, large production and low cost of maintenance, even in the hands of inexperienced labor. A lot of this reason is in the Opening Die Head, and we would like to tell you all about it. Interesting information for the asking.

The Foote-Burt Co., Makers
Cleveland, Ohio

Pretty Small Centers



but just right for a variety of work that can be done on our Bench Miller. Swing 4 in. Can make prompt shipment.

Send for Circular

The Carter & Hakes Co.

West Winsted, Conn., U. S. A.

AGENTS—Marshall & Huschart Mchry. Co., Chicago, St. Louis, Indianapolis; Motch & Merryweather Mchry. Co., Cleveland, Detroit, Cincinnati, Pittsburg; Henshaw, Bulkley & Co., San Francisco, Los Angeles, Oakland, Cal.

Burke's Bench Miller

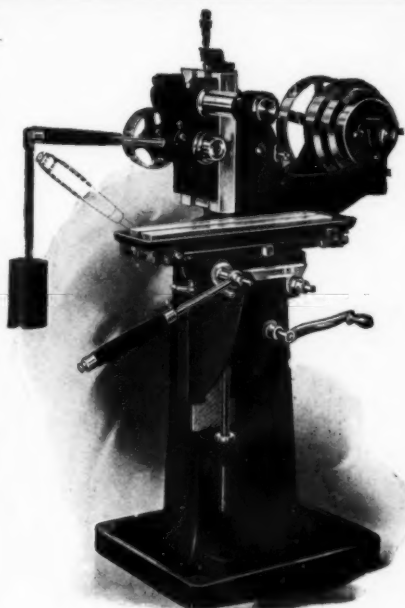


A Seasoned Tool

The tool to buy if you want extreme accuracy and permanent alignment five years hence as well as now. In making this miller the greatest care is taken thoroughly to season all castings both before and after machining. We carry these frames and parts from six to eight months after work begins on them before the final finishing is done. The result is a tool that is accurate and will stay accurate as long as you use it. For precision work it has no equal.

Longitudinal feed, 4 in.;
traverse feed, $3\frac{1}{4}$ in.; vertical
motion of knee 8 $\frac{1}{2}$ in.;
table surface, 3 $\frac{1}{2}$ x 12 in.

Burke Mche. Tool Co.
Conneaut, Ohio



"Whitney"
Hand & Weight (feed) Milling Machine

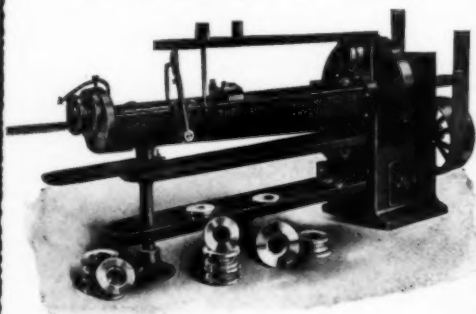
For Cam Cutting, Gear Cutting, Key Seating, Profiling, Slabbing, Slotting, etc., this machine is the handiest, most adaptable, and most efficient on the market.

Catalog No. 10 gives full particulars.

The Whitney Manufacturing Co.,
233 Hamilton St., Hartford, Conn.

The No. 4 Lapointe Broaching Machine

Will Cut Keyways 20" in Length



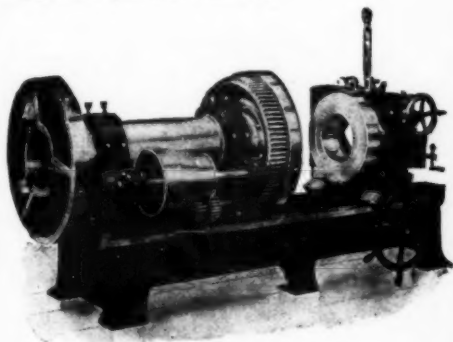
It is a Machine of simple design,
strongly constructed, easily oper-
ated, and will reduce your *pro-
duction* costs.

The Lapointe Machine Tool Co.
Hudson, Mass.

Our 17 Styles and Sizes of Modern Power Pipe Machines

(Belt or Motor Drive)

are diversified in design to meet practically every individual requirement in the rapid and accurate handling of pipe from $\frac{1}{4}$ -inch to 18-inches.



DO YOU WANT an economical machine to cut threads for irregular fittings—quick of adjustment and rapid in operation? If so, we have it.

DO YOU WANT the best there is for threading large quantities of one size pipe? If so, we have a machine especially designed for you. The quick chuck, operated while in motion by a simple movement of the lever, is a B. & K. exclusive feature.

A study of our free Catalog will prove instructive

Bignall & Keeler Mfg. Co.
Edwardsville, Ill.

Anybody Can Bend Pipe

P & S Pipe Bender



opera
for b
inexp
pipe s

T
diam
even
este
save
forth

T
attach
which
vanta

T slot on a movable arm, and can be placed at
All kinds of bends with a wide range of radii and

After you have tried this machine you will
Write for a circular. You will need the machine

H. B. UNDERWOOD & CO.,

Pipe With This Machine Bender (Hand Driven)

Our P & S Pipe Bender is so simple in operation and at the same time so adaptable for bending innumerable shapes that even an inexperienced operator cannot help but bend pipe satisfactorily.

The machine has capacity up to 2-inch diameter pipe, and is powerfully geared so that even a boy can bend this size. You may locate the machine where you are fitting pipe and save much time by eliminating trips back and forth to your pipe bending department.

The face plate to which the quadrants are attached has a continuous rotary movement which, when necessary, is of considerable advantage. The resistance stud is located in a place at any point within the radius of the arm. of radii are possible.

ine you will wonder how you ever did without it.
the machine.

CO., 1022 Buttonwood
Street, **Philadelphia, Pa.**



Starrett Hack Saws

“If a saw and a half cuts a foot and a half, in a day and a half, how much will a dozen saws cut?” Same old example, but when you use STARRETT Hack Saws you’ll find the answer. They cut quicker and last longer. Most good workmen have proved this many, many times.

Made of finest grade of steel, teeth sharp with square cutting points, set evenly—every tooth cuts. Tempered hard and tough—teeth will not shell off.

Send for Catalogue 19HT and post yourself

The L. S. Starrett Co.
Athol, Mass.

NEW YORK,
150 Chambers St.

CHICAGO,
17 N. Jefferson St.



Remember When Ordering Cutters

That our facilities for making **special cutters** to suit your own particular requirements are unexcelled. Send us a sketch of any piece you desire to mill, and we will submit an estimate on the cost of cutters for the job.

Also remember, that we carry in stock 40 varieties and over 3800 sizes of cutters.

Catalogue mailed free.

Brown & Sharpe Mfg. Co.,
Providence, R. I., U. S. A.

B&S

Frictionless Team Work of Collector and Fan

Explains the Efficiency and Long Life of

The Morse "Rarefied" Dust Collector

The best machine for collecting any kind of dust, but its sterling qualities are brought out strong in shops where hard, sharp, flinty dust is raised by emery wheels, polishers, tumbling barrels, sand blasts, etc.

The reason is plain when you know that the collector automatically removes all dust before the air reaches the fan. Therefore all abrasion of fan parts is eliminated, and repairs are kept down to a minimum.

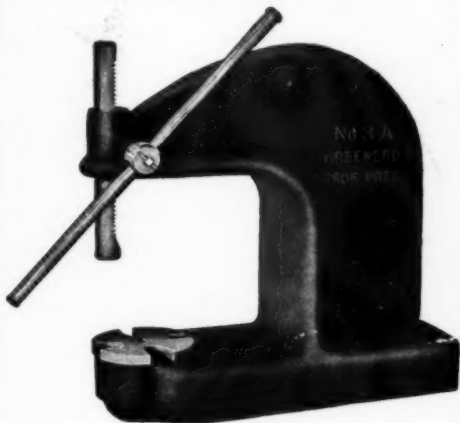
Full particulars are given in our Booklet. Own one for a postal.

**The Knickerbocker Co.,
Jackson, Mich.**



Don't Knock

the material in your own shop—it costs money. The steady pressure of the Greenerd is much better than knocking and pounding—marring and springing—bending and breaking.



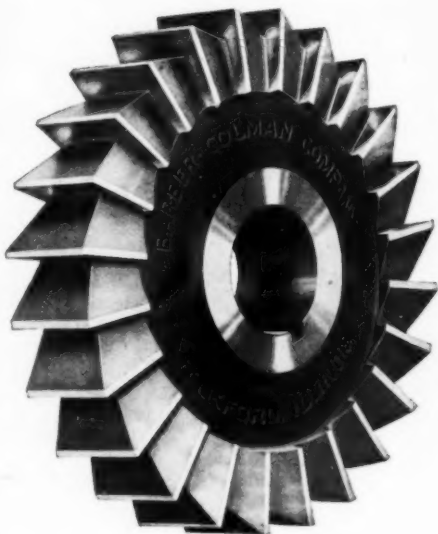
Greenerd Arbor Presses

12 Sizes to 25 Tons Pressure

save so much time, and so much material, in so many different ways, that the case is exceptional where they do not earn their cost every year. They pay 100% on the investment.

*Ask your dealer—he has them
Or write for illustrated folder*

**EDWIN E. BARTLETT, 336 A Street,
Boston, U.S.A.**



Milling Cutters

of the highest accuracy in form, of the best material, fashioned and finished by workmen of exceptional skill and experience, make for productiveness and economy in all milling operations. We ask you to try ours, knowing you will be as glad you found them as we shall be that we found you.

A catalogue first, if you wish it

Barber-Colman Company
Rockford, Illinois



"Detroit" Twist Drills

We Know

that every tool which bears our trade-mark is as good as human skill can make it. Every tool we make is guaranteed to make good. If you get one that proves defective we will replace it or refund the purchase price.

You Know

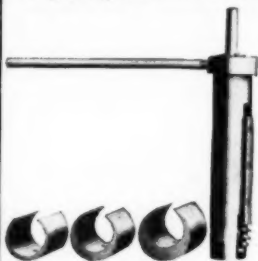
that we could not afford to maintain such a guarantee if our product were not what we claim for it. Get a trial order. Convince yourself by a fair test in your own plant.



Now, while our address is before you, write for Catalog "J"

Detroit Twist Drill Co.
510-522 Fort St., Detroit, Mich.

Keyways Milled On The Drill Press



The National Keyseater assures accurate duplicate keyways. The tools are made in standard sizes most commonly used from $\frac{1}{2}$ to 3 $\frac{1}{2}$ in. By the use of Bushings, several diameters of bores can be keywayed with one tool.

They are used in hundreds of shops all over this country and abroad. The tool can be applied to any ordinary drill press.

Ask us to send you our Catalog

National Machine Tool Co.

128 Opera Place, Cincinnati, Ohio

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels
 " No. 32 " "
 " No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table
 " No. 9 Tilting Table
 " No. 1

Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.
 12, 16, 2, 24 and 3 in., 7 ft. tables and guard.

Trimmers, Lathes, Core Box Tools, etc.

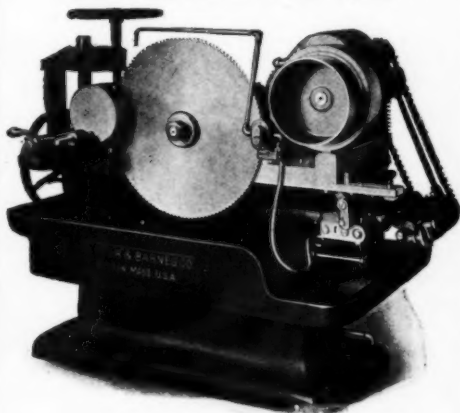
Ask for full descriptions

Chicago Machinery Exchange

1219-1227 W. Washington Blvd., Chicago

A Rapid Production Cutting-Off Machine That Saves Time and Steel

Because it Drives a Small-Diameter,
Thin Milling Saw to its Full Capacity



8-Inch, Latest Model (Counter or Motor Driven.)

We get *results*, because our special spur gear drive delivers the power direct to saw with the least friction. Gear feed $\frac{1}{4}$ to 1 in. per minute. All machines equipped with Patent relief tooth saws.

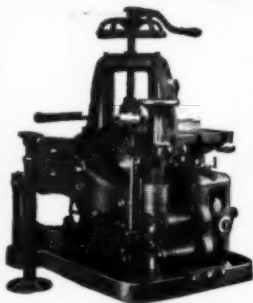
Five sizes—4, 6, 7, 8 and 10-inch

Send for full description of Automatic Sharpener for the Patent B. & S. Relief saw tooth, for soft steel; also cutting records.

Nutter & Barnes Company
326 A. Street, Boston, Mass.

Our Automatic Saw Sharpener shapes and sharpens teeth right.

Lea-Simplex Saws



Possess more desirable features—more of the essentials of metal sawing economy—than any other cold metal saw on the market. You are neglecting your own interests if you fail to investigate and take advantage of its cost-reducing capabilities.

LEA EQUIPMENT COMPANY

Stenton and Wyoming Aves.,

Philadelphia, Pa.

Does the Work of Ten

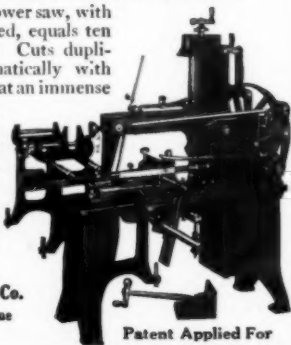
The Marvel Saves Time and Material

This improved power saw, with automatic stock feed, equals ten ordinary machines. Cuts duplicate pieces automatically with great accuracy, and at an immense saving in cost. Even, draw-cut stroke. Buy a Marvel and begin a sure economy, now.

Send for descriptive circular of this machine and other Hack Saws, Punches and Shears.

Armstrong-Blum Mfg. Co.

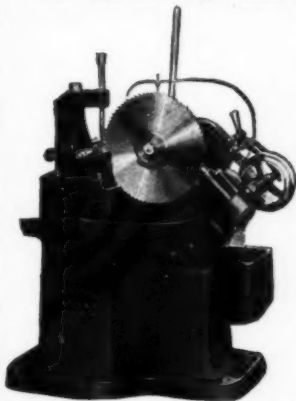
341 N. Francisco Avenue
Chicago, U. S. A.



Patent Applied For

Cutting Off Metal

The Quick Way—The Cheap Way

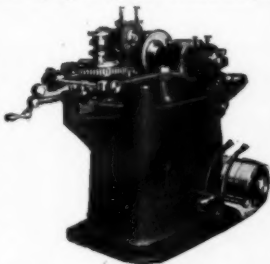


Cochrane-Bly cold saws have materially reduced the cost of cutting iron and steel, because their power and stability permit maximum cutting speeds, while their simplicity and convenience enable stock to be easily and rapidly handled, thereby reducing the non-productive time of the machine to its lowest limit. Sizes for all requirements. Cut

shows our No. 2-R, cutting up to $4\frac{1}{2}$ -inch round stock.

Sharp Saws

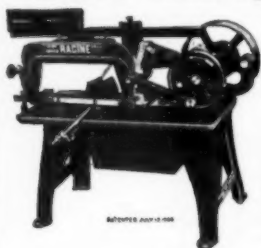
pay good dividends by increasing production. Our sharpener grinds and bevels at one operation, putting the blade in shape to give the best results. Two sizes. The one here shown sharpens 10 to 15-in. blades.



Interesting data on Cold Sawing. May we send it?

Cochrane-Bly Company
Rochester, New York, U. S. A.

The Racine High Speed Metal Cutting Machine



Accurate Economical

This machine, strong and efficient, will cut a 6-inch round bar of machinery steel, True and Straight, in 20 minutes.

On account of simplicity and strength, it requires few or no repairs; reduces waste time; requires low power; has a High Cutting Speed, and with our Special High Speed Blades, more cutting per blade can be done, than with any other metal cutting machine.

Catalogues? Samples?

Racine Tool & Machine Company

Racine Junction, Wis., U. S. A.

Eastern Distributors: Simplex Tool & Supply Co., Boston

Inclinable Open Back Foot Press



Work Discharged by Gravity

Meets every demand for economically manufacturing light work.

Most Efficient Foot Press made.

Let us send you proof

Rockford Iron Works
Rockford, Ill.



**A bar of Air-Hardened Steel
this size will be cut in Ten
Seconds by**

The Abrasive Metal Cutter

YOU WILL FIND the ends left square and true, no grinding to shape required. High Speed, Carbon or Cold Rolled Steel,



Brass, Bronze or any other metal, cut with equal facility. Does away with all notching and breaking. Thin or flexible tubing cut in two seconds, leaving a polished finish.

This speedy machine will do all the cutting-off ordinarily done with hack saws, lathes or milling machines. Cuts stock up to 2 inches, round or square, and never draws the temper.

*Get acquainted with this machine and learn how much
valuable material and time it can save you*

Simplex Tool & Supply Co.
Boston, Mass.



The Famous McCrosky Adjustable Reamer

has been the standard of Adjustable Reamers for years. It has solved the reamer problem in the largest and best shops. **It will solve yours.**

With one set of blades it will out-wear a dozen solid reamers and the blades can be renewed indefinitely.

Principle of construction unequaled.

Workmanship and material unexcelled.



**If you are personally responsible
for shop output and tool expense**

you should have our Catalog No. 3, describing McCrosky Reamers and other Cost-Cutting Tools, such as the Wizard Quick-Change Chuck and Collets, McCrosky Expanding Mandrels, etc. A postal card will bring you a copy.

"The longer you wait the more you lose"

The McCrosky Reamer Co.
Meadville, Pa.





No Fire Risk With Terrell's Steel Equipment

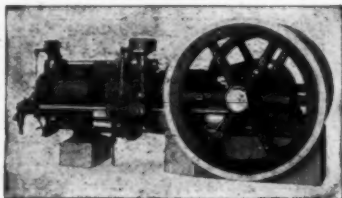
The saving in cost of insurance is only incidental; the great gain is in decreasing the fire hazard. When you add to this the smaller floor space required, the lessened cost of maintenance, the greater convenience in storing and handling material, and the facility with which the Terrell Interchangeable and Adjustable Unit System is extended, reduced or rearranged without injury, its superiority to the old fashioned wood equipment becomes too evident to be overlooked. Let us show you how and why it will pay you to change to steel.

*Our Facts and Figures You'll Find
Worth Having. Write For Them.*

Terrell's Equipment Co.
Hall & Division Sts., Grand Rapids, Mich.

For The Man Who Doesn't Know

What Kind of Power will best Meet his Needs



We
have
written
a
book

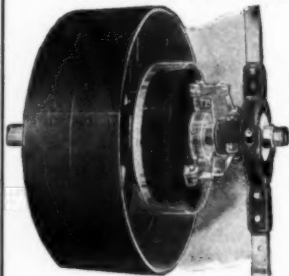
20 to 200 h. p.

Our Free Bulletin No. 22 is a kindergarten-to-college course on power selection from the angle of the user. Write for a copy.

The Elvria Gas Power Co.
Elvria, Ohio

The Edgemont Plate Clutch

Designed, after Exhaustive Experiments
and Tests, to stand both Use and Abuse



It is simple and easily adjusted. The wearing parts are enclosed, permitting them to be used continuously in dusty places. No oil is required on friction plates, which are faced with a burn-proof brake lining, providing a contact surface readily replaced without removal from shaft.

We make clutches for all transmission purposes, including the Edgemont Expanding Clutch, which has been adopted by 40 leading machine tool builders.

Tell us your wants. Write for Catalog D.

The Edgemont Machine Co., 997 Washington St.
DAYTON, O.



Grips Firmly—Runs True

The Standard Improved Chuck holds tools absolutely rigid in its powerful grip. The jaws do not project and the faceplate prevents the insertion of larger tools than the chuck is designed to hold. The jaws, therefore, do not become bell mouthed.

The jaws and screws are of tool steel carefully tempered, and the screws are larger and stronger than those of any other chuck of similar size and type.

Standard Improved Chucks are made in five sizes—to take drills up to $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ", 1". They will give you splendid service.

Write us for quotations

THE STANDARD TOOL CO.

General Offices and Factory Cleveland, Ohio
 New York Salesroom 94 Reade Street
 Chicago Salesroom 552 W. Washington Blvd.

It Has Made Good



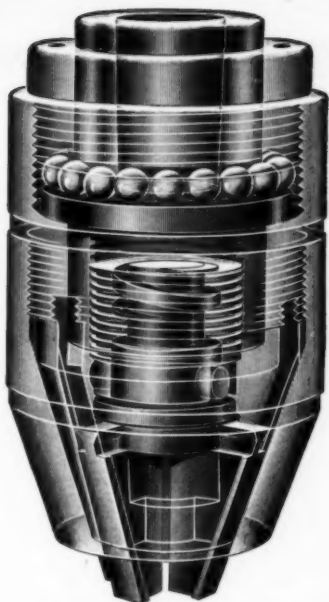
The Jacobs Improved Drill Chuck

has "MADE GOOD" because it is the most shapely, compact, convenient, accurate, efficient; and years of continued use have proven it to be the most durable Drill Chuck obtainable.

Our 34-page illustrated catalogue H sent upon request

The Jacobs Manufacturing Company

32 Union Place, Hartford, Conn., U. S. A.



It's a Snap

You have no idea how quickly profits increase, when you use the MORROW time and money saving, hand operated drill chuck, for holding straight shank drills. POSITIVELY self tightening, and unresisting release by hand, without use of key, or wrench. Built for heavy duty. You will find the "service that pays" in the "MORROW". The largest shops in the country, point to the Morrow drill chuck as their biggest time and money saver

Write for particulars.

Made in five sizes by the
Morrow Manufacturing Co.
Elmira, N. Y.

Sweetland Lathe Chucks

Independent, Universal, Combination, Geared Scroll
Chucks and Special Chucks for Various Work



Combination Chuck with Reversible Jaws

Built to change from independent to universal operation of jaws, or the reverse, with the greatest ease and simplicity of adjustment. The reversible jaws are made unusually strong, and, after being case hardened, are ground perfectly true on face and bite.

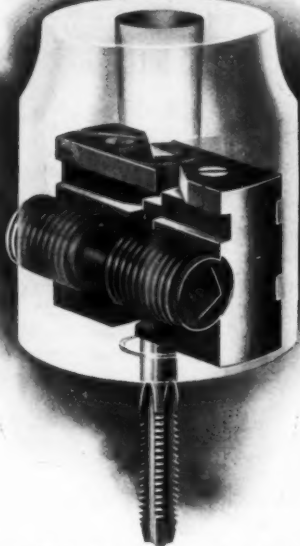
Sweetland Combination Chucks have a greater "combination" of uses than any other chucks on earth, as the jaws can all be operated together, or all independently of each other, or any **one** or more can be operated independently while the others are operated together.

Write for fully illustrated catalog.

The Hoggson & Pettis Mfg. Co.
New Haven, Conn.

Skinner Positive Drive Drill Chucks

Will positively drive high speed drills.



You will find they are used on the highest grade Tapping Machines and Tapping attachments.

New 1912 Catalog is now ready. Copy?

Special circular giving price and full particulars will be sent upon request

The Skinner Chuck Co.

N. Y. Office
94 Reade St.

Factory & Main Office
New Britain, Conn.



The Hill Toolmakers' Lathe Dog

COMBINES the advantages of the one-screw dog and the clamp dog.

Operated quickly by the single screw.

The knurled side screws set it for any diameter up to capacity.

Three sizes, for work up to 1½, 2 and 3 inches.

*Write for Catalog of Hill
Dogs and Red-E Tools*

The Ready Tool Co., - Bridgeport, Conn.



Are You Tired of Paying Big Bills for High Speed Steel?

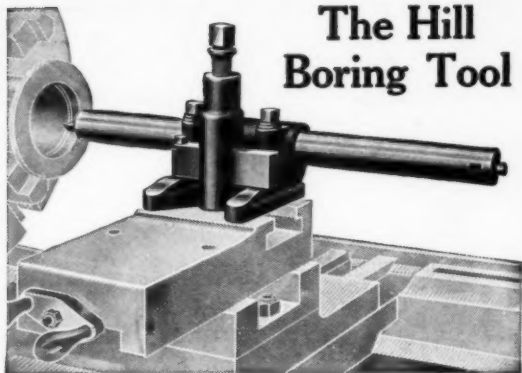
ARMSTRONG TOOL HOLDERS

Make 1 lb. of Tool Steel go as far as 10 lbs. in Forged
Lathe and Planer Tools.

Write for catalog—it tells other advantages

**Armstrong Bros. Tool Co., 308 N. Chicago Ave.
CHICAGO.**





The Hill Boring Tool

Heaviest Cuts Guaranteed

BECAUSE it's made that way. The holder, which clamps rigidly to the cross slide, is a heavy malleable casting, with steel collar screws to bind the steel bar rigidly. It has the strength and solidity for heavy duty, without danger of the cutter twisting around and increasing cut.

OUR LINE of Lathe and Planer Tool Holders is unexcelled. Send for Catalog, which fully explains them, as well as other small tools of quality.

A postal will bring it by return mail

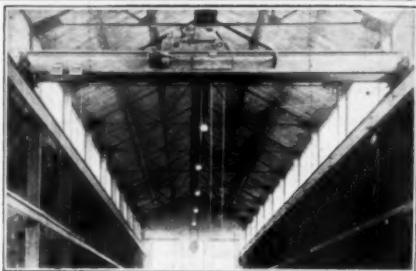
Union Caliper Company

Orange, Mass.

Threading Tool—Sharp V and U. S. Standard Cutters



UNION CALIPER CO.
ORANGE MASS.



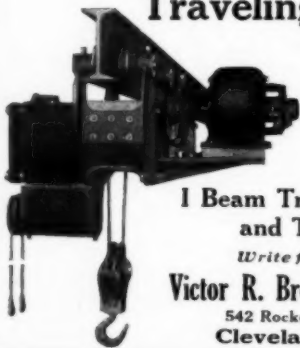
Floor Operated Electric Traveling Cranes

do not require an operator in constant attendance and are frequently as well or better adapted for handling material than the more expensive cab operated.

We make all types of overhead cranes and hoists.

The Euclid Crane & Hoist Company
Euclid, Ohio

Electric Hoists Traveling Cranes



of all types
for
all purposes

**I Beam Track Systems
and Trolleys**

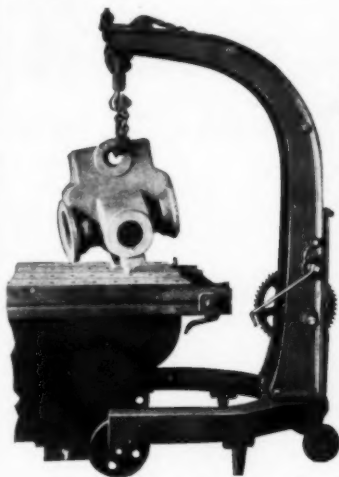
Write for prices

Victor R. Browning & Co.

542 Rockefeller Bldg.
Cleveland, Ohio

"One Man Instead of Ten"

Is what the "Handiest Tool in the Shop" Portable Floor Crane and Hoist MEANS TO YOU, because it does more heavy lifting, lugging and drudge work than any ten men you ever saw. YOU NEED THIS TOOL because it



Saves
Its
Cost

in several
months;
insures
safety and
saves
drudgery.

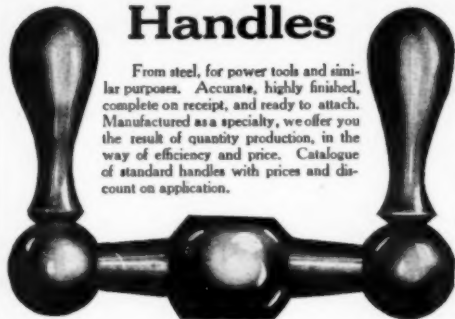
When your men are lifting and lugging, they are doing it AT YOUR EXPENSE. Why not let one man and the "Handiest Tool" take the place of the ten men? Doesn't this saving appeal to you?

What's your address? Ours is

The Canton Foundry & Machine Co.
Canton, Ohio

Handles

From steel, for power tools and similar purposes. Accurate, highly finished, complete on receipt, and ready to attach. Manufactured as a specialty, we offer you the result of quantity production, in the way of efficiency and price. Catalogue of standard handles with prices and discount on application.



The Cincinnati Ball Crank Co.

1245 Plum Street, Cincinnati, Ohio



Lessen the Load of Labor Cost with Durant Counters

to accurately check product, operations and workers' efficiency on Stamping Presses, Screw Machines, etc.

*Catalog 19 shows a size and style for every use.
Send for it and our 30 Days' Free Trial plan.*

THE W. N. DURANT CO., Milwaukee, Wis.



JUNK

**Men do not get the caps
Of Tucker's Positive Lock
Compression Grease Cups
They Won't Jar Off**

For Automobiles and all kinds of machinery having excessive vibration. Cup member has internally milled threads to gauge limits, ensuring interchangeability. We are prepared to furnish the cup part in pressed sheet brass in the following sizes:

$\frac{3}{4}$ in., 1 in., and $1\frac{1}{2}$ in., all 24 pitch thread.

Complete	{	No. 000	$\frac{3}{4}$ in. pipe shank
Cups		No. 00	1 in. pipe shank
		No. 0	$1\frac{1}{2}$ in. pipe shank

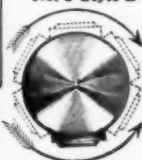
PATENTED JANUARY 11, 1910

Tucker's Oil Hole Covers

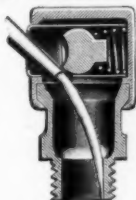


Style C, Self Closing

No. 5 Style B



Self Closing



Style A

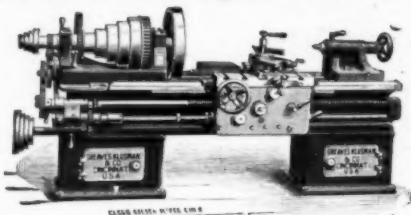
Note the indent of ball valve on styles B & C



Send for Catalogue of full line of Covers
for all kinds of machinery having oil holes

W. C. & F. C. Tucker, Hartford, Conn.

Standard Engine Lathes



Simple Accurate Powerful Convenient

Furnished with either standard cone or with 3-step cone double-back-geared, **carrying a wide belt**, with 18 spindle speeds and wide feed range.

GREAVES, KLUSMAN & CO.
Cincinnati, Ohio, U. S. A.

The Oil Man Pays

When you buy a Curtis Oil Extractor



No. 400—Capacity: 2 Bushels

You don't often get ahead of the oil man, but when you reduce your oil bills with the help of a Curtis the expense isn't on you—it's on the oil man. In a short time the purchase price is returned to you, and then the saving goes into your pocket. It's a strong, simple, ball-bearing machine, built for long, hard service. Three sizes. Can furnish a steam attachment for cleaning waste.

Stop wasting good oil and money—write today

Curtis Oil Extractor Company
25 Union St., Worcester, Mass.



LEIMAN BROS.
BLOWERS
VACUUM
PUMPS

**For Blowing Chips from
 Machine Tools**

for all Gas and Oil Appliances, Sand Blasts,
 Boat Whistles, Calliopes, Gas Producers,
 Gas Boosting, Testing

VACUUM CLEANING

Take up own wear. Small Piston.
 Big Air Space. No Springs. Pow-
 erful. Noiseless. Can't get out
 of order.

Blower Catalog No. 26

Vacuum Catalog No. 27

LEIMAN BROS.,
62R JOHN ST., **NEW YORK**

If You Want to Buy or Sell
Second-Hand Machinery

Or if you have any for sale

Ask

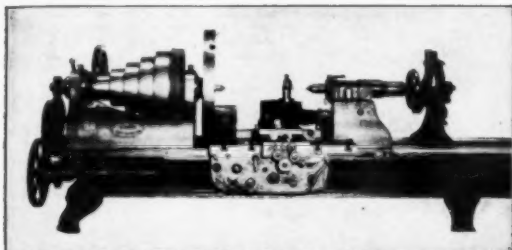
Buffalo Tool & Supply Co.
15 W. Swan St., Buffalo, N. Y.,

What they can do for you.

They are equipped to make it interesting.

Second Hand Machinery

A Sample of our Second Hand Machines



38x19 New Haven Lathe, 5-Step Cone, Comp. Rest, Good Condition.

BORING MILLS.

30 in. Bridgeport, vert. turret.
34 in. Colburn, swivel turret.

42 in. Bullard, 2 swivel heads.
Atlas cylinder boring machine.

DRILLS.

3 spindle Allen, ball bearing.
3 sp. Henry & Wright, ball bearing.
22 in. Snyder, sliding head.
24 in. Mechanics, b. g., power fd.
26 in. Barnes, sl. hd., gd. fd., tap'g.

24 in. Hamilton, sl. head, tapping.
34 in. Barnes, sl. hd., gd. fd., b. g.
34 in. Lodge & D., sl. hd., b. g., p. f.
36 in. Bickford radial, gear box dr.
5 ft. Bickford full univ., cone dr.

LATHES.

14x 6 Prentice, 4-st. cone, dbl. b. g.,
chuck, relieving att.
16x 6 Blaisdell, compound rest.
16x 6 Le Blond, comp. rest, chuck.
16x 6 Lodge & S., c. r., taper, chuck.
16x 8 Flatler, compound rest.

16-28x8 American gap lathe, c. r.
17x 6 Bradford, c. r., raised to 26 in.
24x12 Lodge & D., pl. rest, hol. sp.
25x20 Sellers, compound rest.
34x20 Putman, compound rest.
16x72 in. Bridgeport auto. threading.

TURRET LATHES AND SCREW MACHINES.

21 in. Gisholt 6-hole tur., power fd.
8 1/2 x 16 in. Potter & J. auto. turret.
2x24 in. J. & L. flat tur., cone dr.

2 in. Pearson w. f. screw machine.
3, 3 1/2 & 2 1/2 in. Cleveland automatics.
1 1/2 in. No. 55 National-Acme auto.

MILLING MACHINES.

No. 15 Becker-Brainerd universal.
No. 1 Brown & Sharpe universal.
26x6 1/2 x 18 in. Oesterlein plain.

No. 5B Becker-Brainerd plain.
No. 5 Ingersoll combination vertical
and horizontal.

PLANERS.

17x17x 4 New Haven.
20x20x 4 Pease, Farwell milling hd.
24x24x 6 Pond.

36x36x 6 Gray, one head.
36x36x10 Whitcomb, two heads.
38x38x12 New Haven.

MISCELLANEOUS.

Bolt cutter, sgl. hd., 1 1/2 in. National.
Gear cutter, 36x9 in. Gould & E.
Grinder, plain, 12x96 in. Landis.
Hammer, steam, 600 lb. Bement.
Hammer, steam drop, 1500 lb. Lane.
Keyseater, No. 2 Colburn.

Shaper, 16 in. Ohio.
Shaper, b. g., 16 in. Smith & Mills.
Shaper, b. g., 20 in. Smith & Mills.
Shaper, draw stroke, Baker, new,
very heavy.

Send for our April "Red Cross List" giving complete descriptions. Our stock changes constantly. Write us for what you want.

Marshall & Huschart Machinery Company

17 S. Jefferson St., Chicago.

334 N. Capitol Ave., Indianapolis.

925 Chemical Bldg., St. Louis.

On Account of Fire

in our former store at 555-557 W. Washington Boulevard on March 7th, we are offering at

Special Reduced Prices

Tools that were in the store, consisting of

LATHES, from 12 to 20-inch swing, various makes;

DRILL PRESSES, various sizes and styles, up to 30 inches;

GRINDING MACHINES—a full line;

PLANER, 24x24 in. x 6 ft. Whitcomb-Blaisdell;

BORING MILL, 30 in. Colburn;

PUNCH PRESSES;

GEAR CUTTERS.

ALSO a large line of miscellaneous machines, which space forbids listing here in detail. Write for full description of them, or send us a list of the machines you require.

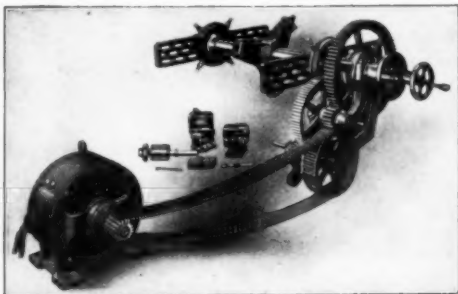
Most of these tools were damaged by water only, and will be sold either in their present condition or put in first class order, as may be required by customer.

We need the room badly and will close these tools out quickly, so send us your requirements as promptly as possible.

The E. L. Essley Machinery Co.
817 W. Washington Blvd., Chicago, Ill.

Boring Cylinders In Place

A Specialty of our Portable Boring Bar



Portable Boring Bar, Driven with Motor and Silent Chain.

HAVING FIXTURES for boring in any position, and in very cramped places, repairs in many cases are effected in the time ordinarily needed to disconnect the parts. This bar is readily operated in a space which allows the taking of the piston out of the cylinder.

Equally well adapted for the boring of all kinds of engines, pumps, air compressors, steam hammers, valve seats, etc. Does as accurate work as can be done in any machine shop. Hand or motor driven.

Write for Catalog so you can study our complete line of labor saving Portable Tools

H. B. Underwood & Company
1022 Buttonwood St , Philadelphia, Pa.

Second-Hand Machinery.

Lists of second-hand machinery either for sale or wanted, will be published under this heading at the rate of **40 cents a line**, across the page, each issue, with a minimum charge of **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for. Prices and full descriptions of the machines listed will be furnished by the parties offering them for sale. If you do not find what you require, use the slip inclosed with each book to make known your wants to the publisher.

FOR SALE BY

Buffalo Tool & Supply Co., 15 W. Swan St., Buffalo, N. Y

Blower, pressure or vacuum, Lehman, capacity 160 ft.,	\$ 65.00.
Cold cut-off saw, circular, 6 in. capacity, Nutter & Barnes,	85.00.
Drill press, 20 in. Barnes, square base, p. f., b. g., w. & l. f.,	65.00.
Drill press, 24 in. Hoefer, square base, sta. head, b. g., p. f., w. & l. feed, auto, stop,	85.00.
Engine lathe, 26x16 New Haven, 2 in. hollow spindle, fine condition,	300.00.
Engine lathe, screw cutting, Sebastian, 16x8 bed, compound rest, 14 in. hollow spindle,	175.00.
Engine lathe, plain, 18x6 Ledge & Barker, fine order,	100.00.
Jointer, 12 in. Clement,	100.00.
Motor, 10 h. p., 60 cy., 3 phase, variable speed,	100.00.
Jointer, 16 in. Buss, good as new,	100.00.
Planer, pony, 24 in. Williamsport, No. 2,	90.00.
Tube swedge, Dayton,	75.00.
Turret lathe 21 in. Perkins,	150.00.

Send your order along at once if you desire to purchase bargains.

FOR SALE BY

**Wm. C. Johnson & Sons Machinery Co.,
210-212 Washington Ave. St. Louis, Mo.**

LATHES.

14x6 Bradford, quick change.	30x8 Putnam.
16x7 Pratt & Whitney.	36x12 in fair condition.

GASOLINE ENGINES.

28 h. p. Fairbanks-Morse.	32 h. p. Fairbanks-Morse.
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AIR COMPRESSORS.

8x8 belted.	8x8x8 Gardner, steam driven.
10x12 belted.	11 in. Westinghouse.
10x10x10 steam driven.	960 cu. ft. Norwalk, steam driven.

STEAM PUMPS.

22x14x24 Dean duplex.	16 & 26x12x18 Gordon compound.
-----------------------	--------------------------------

STEAM ENGINES.

6 h. p. vertical.	7x12 Brownell, self-contained.
10x20 Atlas.	14x24 slide valve.

MISCELLANEOUS.

Belting, 70 ft. 18 in. double leather.	Keyway cutter, No. 6 Morton.
Bending rolls, 7 in. dia., 8 ft. long.	Miller, universal, No. 1 Brown & S.
Bolt cutter, No. 1 Wells.	Pipe mche., 8 in. Bignall & Keeler.
Bolt cutter, 3 1/2 in., quick opening hd.	Punch and shear, No. 15 Williams-
Bolt header, 1 in.	White, 25 in. throat, cap. 3/4 in. 1/2.
Boring mill, vertical, 4 ft.	Splitting shear, 48 in. cap. 1 in. plate.
Blower, No. 10 Buffalo.	Screw machines, Garvin No. 1, (2).
Grinder, twist drill, American.	Squaring shears, power, 42 in. (2).
Hammer, strap, 30 lb. Bradley.	Travelling crane, 10 ton, 29 ft. span.
Hammer, vacuum, 80 lb. Yeakley.	Tube cutter, 2 in. rotary.
Hammer, 90 lb. Justice.	Turret lathe, 13 in.
Hammer, 400 lb. Yeakley.	

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,
707-715 Lakeside Av., N. W., Cleveland, Ohio

Branches: Detroit, Cincinnati, Pittsburg.

Rebuilt Machine Tools.

Our illustrated Booklet of Machine Tools sent on request.

BORING MACHINES.

- 30 in. Bullard swivel head, combination chuck table, in first class condition.
- 24 in. bar Binsse horizontal, late type, first class condition.
- 34 in. bar, Niles horizontal, table type, good condition.

DRILL PRESSES.

- 20 in. Style "F" Baker, back geared, power feed, very good condition, (3).
- 21 in. Hoefler, back geared, good as new.
- 21 in. Bickford, sliding head.
- 28 in. Rockford, sliding head, good as new.
- 28 in. Aurora, sliding head, back geared, power feed, first class condition.
- 26 in. New Haven, back geared, sliding head, good condition.
- 30 in. Bickford, sliding head, back geared, power feed.
- 36 in. New Haven, sliding head, back geared, A 1 condition.
- 32 in. Pond, sliding head, back geared, power feed, good condition.
- 4-spindle Pratt & Whitney sensitive.
- 4-spindle Garvin 20 in. geared drill.
- 6-spindle Quint turret, first class condition.
- 8-spindle Gardam, good condition.

DRILLS—RADIAL.

- 36 in. plain radial, good shape.
- 36 in. Fosdick, tapping attachment, first class condition.
- 42 in. Niles, round column, back geared, gear feed, half universal, A 1 cond.
- 48 in. Fosdick, gear drive and feed, tapping attachment, first class condition.
- 48 in. Prentice, plain, heavy tool, good condition.
- 48 in. Box half universal, good condition.
- 5 ft. Fosdick, plain, gear feed tapping attachment, first class condition.
- 5 ft. Pond, plain, in good shape, (2).
- 6 ft. Pond, plain, gear feed, good condition.

GEAR CUTTERS.

- No. 2 Dwight Slate, capacity 8x4 in. cuts up to 12 d. p.
- 26 in. Brown & Sharpe spur gear, very good condition.
- 26 in. Fellows gear shaper.
- 48 in. Gould & Eberhardt, first class condition.
- 64x16 Gould & Eberhardt, fair condition.

GRINDERS.

- Heald, drill, good as new.
- Yankee, drill, good condition.
- Blount and Gisholt tool grinders, good condition.
- Heavy foundry, good as new, double wheel.
- Diamond, surface, table 60x12 in., very good condition.
- 10x36 Landis, plain, with internal grinding attachment, good condition.
- No. 1 Landis, internal, good condition.
- No. 2 Morse, plain, first class condition.
- No. 2 Leland & Falconer, tool, double wheel, good shape.
- No. 3 Landis, universal, good condition.
- No. 3 Landis, plain, very good condition.
- No. 3 Diamond, polishing, (2).
- No. 11 Brown & Sharpe, plain, first class condition.
- No. 24 Landis, plain, with attachments, very good condition.
- Heald Ring surface grinders, good condition, (2).
- Cincinnati cutter grinder, good condition.

LATHES.

- 11x 6 Reed, rise and fall rest, first class condition.
- 14x 6 Prentice, taper attachment, good condition.
- 16x 6 Flather, plain rest, taper attachment.
- 16x 6 Reed, rise and fall rest, good condition, (2).
- 16x 6 Reed, compound rest, good condition.
- 16x 6 Prentice, double back geared, comp. rest, good condition.
- 18x 6 Porter, comp. rest and chuck, good condition.

SECOND-HAND MACHINERY

The Motch & Merryweather Machinery Co.—Continued.

LATHES—Continued.

- 18x 8 Lodge & Davis, comp. rest, taper attachment, very good condition.
18x10 Schumacher & Boye, chuck, comp. rest, first class condition.
22x12 Pond, comp. rest, chuck, good condition.
22x16 Pond, comp. rest, fair condition.
36x16 New Haven, comp. rest, fair shape.
38x24 New Haven, comp. rest, chuck jaws, attachments, good condition.
48x34 Niles, triple geared, comp. rest, raising blocks, steady rests, good cond.
Roll lathe, 39 in. swing by 9 ft. centers, good condition.

MILLING MACHINES

- No. 1 Fynon universal, good condition, no attachments.
No. 14 Brown & Sharpe plain, very good condition.
No. 32 Garvin plain, with arbor and vise, good condition.
No. 3 Owen plain, with vise, first class condition.
No. 3 Cincinnati plain, belt feed, first class condition.
No. 3 LeBlond, all gear feed, very good condition.
No. 2 Hisey-Wolfe miller, good condition.

PLANERS.

- 15 in. Bush, crank, good shape.
22x22x 4 New Haven, single head, first class condition.
22x22x 6 Gray, single head, good condition, (2).
24x24x 6 Ohio, single head, first class condition.
24x24x 8 Powell, single head, good condition.
30x8 Detrick & Harvey, open side, two heads, good condition.
32x32x 8 Lodge & Davis, single head, fair condition.
36x36x 8 Sellers, spiral drive, single head, good condition.
48x48x16 Detrick & Harvey, open side, two heads, very good condition.

SHAPERS.

- 15 in. Hendey, friction, with vise, first class condition, (2).
16 in. Walcott, with vise, back elliptic geared, good condition.
16 in. Flather, gear box drive, latest model, first class condition.
16 in. Gould & Eberhardt, back geared, good condition, (2).
24 in. Queen City, crank, good as new.
20 in. Kelly, latest type, good as new, with vise.
20 in. Hendey, friction, first class condition, with vise.
22 in. Smith & Mills, shifting belt, first class condition.
24 in. Hendey, friction, with vise, good condition.
24 in. Smith & Mills, shifting belt, first class condition.
26 in. Lodge & Davis, shifting belt, fair condition.
26 in. Cincinnati, shifting belt, very good condition.
24 in. Morton, draw stroke, friction, and vise, good condition.

TURRET LATHES AND SCREW MACHINES.

- No. 4 Pratt & Whitney chucking machine, fair condition.
2x24 in. Jones & Lamson, sliding head, very good condition.
42 in. Cleveland auto., latest type, 1st. class shape, collets pads and equipment.
21 in. Gisholt, latest type, first class condition, with equipment.
21 in. Gisholt, old type, good condition.
24x10 Lodge & Shipley turret, good condition.
28 in. Gisholt, late type, power rapid traverse, good condition.

MISCELLANEOUS.

- Bending machine, belt driven, weight about 8,500 lbs., good condition.
Bolt cutter, 2 in. Acme, good condition, with dies.
Cold saws, No. 1 Burr, very good condition, (2).
Grinder, motor driven, 12x2 in. Ransom, first class condition.
Hammer, tire welding, No. 35 Williams White, good condition.
Hammer, drop, 1200 lbs. Billings Spencer.
Keyseater, No. 1 Davis, good condition.
Keyseater, 18x12 in. Morton, with bars and cutters, good condition.
Pattern makers' lathes, 20 in. x8 ft. swing, (2).
Pipe machine, lathe bed type, 6 in. Saunders, in good condition.
Pipe machine, 12 in. Curtis, with dies, very good condition.
Planer, portable, Morton, electric drive, 40 in. stroke, good condition.
Press, No. 19 Stiles & Parker, inclinable, 2 in. stroke, first class condition.
Riveter, pneumatic, 10 in. stroke, good condition.
Slotter, 8 in. Newton, in good condition.
Tapper, Pratt & Whitney, good condition.

SECOND-HAND MACHINERY

FOR SALE BY

Joseph T. Ryerson & Son, - 16th and Rockwell Sts., Chicago
POWER PUNCHES.

Item.

- H661 Geo. C. Keene 36 in. mult. punch, cap. thirty $\frac{1}{2}$ in. holes in 3-16 in.
 H287 Cleveland 90 in. mul. punch, cap. thirty 13-16 in. holes in $\frac{1}{2}$ in.
 H638 Kraut steel plate double end 24 in. punch, capacity 1x1 in.

POWER SHEARS.

- H 59 H. Pels & Co. Johns beam shear; cap. 12 in. 35-lb. beams; belt drive.
 H593 Lennox circle shears; cuts $\frac{1}{2}$ in. heads, 42 in. diameter.
 H601 Thompson stroke type, bevel shears, cap. $\frac{1}{2}$ in. plate.

PLANERS.

- | | |
|--|--|
| H215 Gray, 36x36x10, 2 hds.; motor. | H169 Sellers, 42x42x8 $\frac{1}{2}$, 2 hds.; b. dr. |
| H158 Pond, 36x36x6, 1 hd.; belt d. | H664 Pond, 36x36x10, 2 hds.; b. dr. |
| H163 Sellers, 36x36x7, 1 hd.; belt d. | H785 Miles, 30x30x15, 1 hd., belt'd. |
| H167 Sellers, 42x42x6 $\frac{1}{2}$, 2 hds.; b. dr. | |

LATHES.

- H717 Prentice 26x12 d. b. g., hollow spindle, compound rest.
 H767 11x3 $\frac{1}{2}$ speed lathe, turret slide, cut-off slide.
 H720 Jones & Lamson 2x24 turret lathe.
 H744 Springfield Fox 18x6, turret on bed.
 H801 Drees 20x6 full universal monitor.
 H804 LeBlond 14x8 hollow spindle, compound rest.
 H506 Gisholt 28 in. turret, 3 $\frac{1}{2}$ in. hole in spindle.
 H507 Gisholt 34 in. turret, 4 $\frac{1}{2}$ in. hole in spindle.
 H234 Hendey, 18x10, quick change gear, hollow spindle; com. rest; p. c. f.
 H784 Flather 17x8, q. c. g., hollow spindle, comp. rest.
 H816 Prentiss 18x8 hollow spindle, compound rest.

DRILLS.

- | | |
|---------------------------------------|----------------------------------|
| H716 American No. 3, sensitive. | H654 Hamilton, 36 in. adj. head. |
| H516 Barnes, 26 in. adj. head. | H517 Snyder, 25 in. adj. head. |
| H610 Dallett No. 3, port. rope drive. | H786 Reed, 2 spindle sensitive. |

SHAPERS.

- | | |
|-----------------------------------|-------------------------------|
| H511 Hendey 15 in., friction. | H803 Hendey 24 in. friction. |
| H512 Smith & Mills, 15 in. crank. | H810 Walcott 26 in. friction. |

PNEUMATIC RIVETERS.

- H615 Allen 34 in. reach, 14 in. gap, capacity 1 in. rivets.
 H605 Albree toggle, 26 in. reach, capacity 1 in. rivets.
 H491 Hanna patented lever; 25 in. reach; 15 in. gap; capacity $\frac{1}{2}$ in. rivets.

MILLING MACHINES.

- | | |
|-----------------------------------|------------------------------|
| H665 Ingersoll, slab 36x36x8. | H782 Cincinnati No. 2 plain. |
| H636 Garvin No. 4 plain, 3 feeds. | H737 Kempsmith No. 2 plain. |
| H788 LeBlond No. 4 plain. | H776 Kempsmith No. 1 Univ. |
| H658 Lincoln type, 6x26 in. | |

MISCELLANEOUS.

- H693 Blower, Sturtevant 36 in., 14 in. outlet.
 H670 Bolt cutter, 1 $\frac{1}{2}$ in. Putnam.
 H808 Boring machine, horizontal, No. 2 Binsse.
 H213 Boring and drilling machine, horizontal, 4x27x60 in., Beaman & Smith.
 H672 Cutting-off machine, 3 in. Hurlburt & Rogers.
 H732 Drawing press, 14x21 bolster, stroke 2 $\frac{1}{2}$ in.
 H809 Keyseater, No. 0 Little Giant.
 H206 Profiling machine, No. 2 Pratt & Whitney.
 H647 Screw machine, hand, $\frac{1}{2}$ in. Pratt & Whitney.
 H541 Screw machine, 1 in. Cleveland automatic.
 H538 Screw machine, 2 in. Cleveland automatic.
 H623 Tapping machine, No. 1 Garvin automatic.

SECOND-HAND MACHINERY

FOR SALE BY

C. C. Wormer Mach'ry Co., 94-96 W. Woodbridge St., Detroit, Mich.

ENGINE LATHES.

- | | |
|---------------------------|--------------------------|
| 15x 6 Nutter-Barnes. | 21x13 Lodge & Davis. |
| 16x 6 Le Blond. | 24x10 Greaves Klusman. |
| 16x 8 Blaisdell. | 24x10 Porter. |
| 18x 8 Lodge & Davis. | 24x12 Le Blond. |
| 18x 9 Whitcomb Blaisdell. | 26x16 Schumacher & Boye. |
| 19x 6 Pond. | 26x22 Fifield. |
| 21x11 Lodge & Davis. | 28x12 New Haven. |

SPECIAL LATHES.

- | | |
|---------------------------------|-------------------------------|
| 7x31 in. Stark bench lathe. | 39 in. column facing lathe. |
| 14 in. single hd. axle lathe. | 48 in. dbl. end pulley lathe. |
| 20x7 Lodge & D. chucking lathe. | 52 in. bk. gr. pulley lathe. |
| 22 in. Prybil spinning lathe. | 60 in. Stevens pulley lathe. |

TURRET LATHES.

- | | |
|--------------------------------------|------------------------------------|
| No. 1 Warner & S. universal. | No. 5 Foster, friction gd. hd. |
| No. 2 Amer. universal. | No. 1 Amer. square arbor Fox. |
| 12 in. Dreses, plain head. | 15 in. Prentiss sq. arbor Fox. |
| 18 in. Bardons & O., plain hd. | 21x7 Lodge & D. chucking turret. |
| 18x6 Hendy, plain head. | 22 in. Gisholt, with turret slide. |
| Pratt & W., plain head gap. | 24 in. Davis boring and forming. |
| 16 in. Warner & S., friction gd. hd. | 24 in. Gisholt, triple gd. hd. |

SCREW MACHINES.

- | | |
|-------------------------------|---------------------------------|
| No. 0 Brown & S., plain head. | No. 2 Brown & S. automatic. |
| No. 2 Foster, plain head. | No. 3 A. Spencer automatic. |
| No. 12 Garvin, plain head. | No. 1 Pratt & Whitney. |
| 8 in. Cleveland automatic. | No. 3 regular Spencer Hartford. |
| 8 in. Cleveland automatic. | 10x3 Warner & S., wire feed. |

DRILLS.

- | | |
|--------------------------------|--------------------------------|
| 2 spindle style A. Fox sens. | 10 in. Barnes, friction disc. |
| 3 spindle Fox sensitive. | 14 in. Rockford, with tapper. |
| 3 spindle Barnes. | 17 in. style F. Baker Bros. |
| 3 spindle 12 in. Woodward & P. | 28 in. Snyder, sliding head. |
| 4 spindle 14 in. Gardam, sens. | 36 in. Prentice, sliding head. |
| 6 spindle No. 1 Foote-Burt. | 4 1/2 ft. arm Box radial. |

SHAPERS.

- | | |
|-----------------------------------|------------------------------|
| 10 in. Roynnton & Plummer, crank. | 24 in. Hendy, geared rack. |
| 15 in. Perkins, friction. | 24 in. Lodge & D., gd. rack. |

PLANERS.

- | | |
|------------------------------------|-----------------------------|
| 20x19x4 New Haven. | 26x26x 6 Wheeler. |
| 20x20x4. 22x22x4. 22x22x5 Wheeler. | 28x28x 6 Pond. |
| 22x22x5 Pond. | 30x30x14 Miles. |
| 24x24x6 Hendy. | 36x36x12 Fitchburg. |
| 24x24x 7 New Haven. | 16 ft. Niles, boiler plate. |

MILLERS.

- | | |
|----------------------------------|-------------------------------|
| No. 7 Brainard, Lincoln. | No. 2 Fox, hand. |
| Pratt & Whitney bk. gd. Lincoln. | Pratt & Whitney, hand. |
| No. 1 Cincinnati. | No. 59 Bement & Dougherty. |
| No. 2 Owen, universal. | No. 2 Davis & Egan, bk. gr. |
| No. 4 Brainard, plain. | Beman & Smith 2 sp. motor dr. |

PIPE MACHINES.

- | | |
|--------------------------------------|-------------------------------|
| No. 9 Merrill, hand. | 4 to 2 in. Apex, power. |
| 1/2 to 2 in., No. 1 Williams h. & p. | 1 to 4 in. Armstrong, power. |
| 4 to 6 in. Curtis, hand & power. | 2 1/2 to 4 in. power. |
| 1/2 to 2 in. No. 1 Apex. | 2 1/2 to 1 in. Curtis, power. |

HAMMERS.

- | | |
|----------------------------|--------------------------------|
| 80 lb. Yeakley, pneumatic | 200 lb. board lift. |
| 125 lb. Bradley, strap. | 250 lb. Ferris & Miles, steam. |
| 150 lb. Marchand & Morgan. | 1000 lb. board lift. |

MISCELLANEOUS.

- | | |
|-----------------------------------|----------------------------------|
| Boring mill, 30 in. Bullard vert. | Gear cutter, No. 11 Slate auto. |
| Boring mill, 48 in. Harrington. | Rivet spinner, 3 in. Stecher. |
| Boring machine, 48 in. Bement. | Sorue cutter. |
| Brake, 8 ft. Ohl automatic. | Swaging machine, 1 in. capacity. |
| Crane, 3 ton portable. | Tire welder, with shear. |

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company, 111 Broadway, New York.
Located at Chicago, Boston and New York.

LATHES.

- | | |
|--------------------------------------|-----------------------------------|
| 13x5 American, speed, with set-over. | 21x8 Starr, turret on carriage. |
| 13x6 Blount speed lathe. | 22x12 Niles, with taper. |
| 13x6 P. & W., r. & f. taper. | 22x16 Fitchburg, plain rest. |
| 14x5 American, brass, Fox att. | 32x12 Pond, comp. r., q. c. |
| 14x6 Miles, comp. r. | 36x17 Pond, comp. r., tri. grd. |
| 18x6 Blaisdell, r. & fall. | 42x22 Niles, comp. r., tri. grd. |
| 18x6 Pond, turret tool post. | 42x32 Putnam, comp. r., tri. grd. |
| 18x7 Pond, turret tool post. | 48x16 Bement, comp. r., tri. grd. |
| 18x8 Pond, comp. r. | |

SCREW MACHINES, TURRET LATHES, ETC.

- | | |
|--|---|
| No. 3, 2 15-16 in. Niles screw mche. | 4 in. P. & W. 2 sp. automatic screw machine. |
| 24x26 P. & W. turn table turret, 220 v. motor dr., bar and chuck outfit. | 4 in. Acme old style 4-sp. automatic. |
| 24-27 Conradson semi-automatic turret, 2 3-16 in. hol. sp. | 4 in. single turret Spender automatic. |
| 28 in. Milwaukee turret. 4 1/2 in. hol. sp. | 1 1/2 in. Gridley 1-sp. automatic. |
| 4 in. Hartford automatic pin machine | 21-32 in. No. 2 Brown & Sharpe automatic screw machine. |
| 4 in. P. & W. automatic screw mach. | |

BORING MACHINES.

- | | |
|------------------------------------|--|
| 50 in. Niles pulley borer. | 10 ft.-16 ft. Bement extension, 220 v. motor dr., 2 hds. |
| 56 in. Niles b. & t. mill, 2 heads | 2 in. sp. Kelly hor. bor. and drill. |
| 7 ft. Pond b. & t., 2 heads. | 96 in. swing x 10 ft. centers bor. & facing; weight: about 43,000 lbs. |
| 8 ft. Michaels b. & t., 1 head. | |
| 10 ft. Pond b. & t., 2 heads. | |

PLANERS.

- | | |
|--------------------------|--------------------------------|
| 17x17x4 Whitcomb. | 42x42x12 Woodward & P., 4 hds. |
| 22x22x6 Harrington. | 42x42x20 Miles, 3 hds. |
| 24x24x6 Ohio. | 48x48x16 Pond, 4 hds. |
| 26x23x16 Miles, 2 hds. | 48x48x20 Sellers, 3 hds. |
| 30x30x6 Pond, 1 hd. | 50x50x18 Gleason, 2 hds. |
| 30x30x24 Sellers, 2 hds. | 62x62x30 Pond, 4 hds. |
| 32x32x12 Pond, 2 hds. | 78x72x24 Bement, 3 hds. |
| 32x32x14 Pond, 2 hds. | 86x86x30 Pond, 4 hds. |
| 36x36x20 Pond, 3 hds. | 86x86x35 Pond, 4 hds. |
| 40x40x26 Pond, 4 hds. | 96x96x16 Powell, 4 hds. |

SLOTTERS AND SHAPERS.

- | | |
|---------------------------------------|--------------------------------------|
| 10 in. crank shaper, Miles. | 18 in. crank shaper, Bement. |
| 12 in. crank shaper, Bement. | 32 in. triple grd. rack, Cincinnati. |
| 18 in. double trav. head, Cincinnati. | |

UPRIGHT AND SENSITIVE DRILLS.

- | | |
|---|--|
| 13 in. 1 sp. sensitive motor d., 110v. | 26 in. W. F. & J. Barnes, tap. att. |
| 10 in. 2 sp. sensitive, Slate. | 28 in. sliding head, Pond. |
| 10 in. 3 sp. sensitive, Slate. | 30 in. sliding head, Putnam. |
| 10 in. 3 sp. sensitive, Signourney. | 36 in. sliding head, Gould & E. |
| 2 spindle double column sensitive, Langelier. | 48 in. sliding head, Niles. |
| 17 in. 4 sp. gang, Jones & L. | 10 sp. adjustable R. & W., capacity 1 1/2 in. holes in 37 in. circles, belt or motor; weight: 30,000 pounds. |
| 18 in. stationary hd., plain, Niles. | |
| 24 in. sliding head, Niles. | |

RADIAL DRILLS.

- | | |
|------------------------------------|-------------------------------------|
| 2 1/2 ft. semi-radial, Hilles & J. | 6 ft. plain belt or motor, Pond. |
| 4 1/2 ft. semi-radial, Barr. | 6 ft. 10 in. semi-universal, Niles. |
| 5 ft. plain belt or motor, Pond. | 7 ft. 6 in. full universal, Niles. |
| 5 ft. 6 in. semi-universal, Niles. | Univ. portable radial, Prentice. |

MILLERS AND GEAR CUTTERS.

- | | |
|---|-------------------------------|
| No. 2 hand P. & W., 16x7 table. | No. 2 universal Le Blond. |
| 24x6 table, plain, Garvin. | 24 in. spur gears, Gould & E. |
| 24x7 table, plain, Becker. | 36 in. spur gears, Pond. |
| 31x5 table, plain, Garvin. | 72 in. spur gears, Niles. |
| Single sp. profiler, 21x24 in. table, Garvin. | 84 in. spur gears, Niles. |

SECOND-HAND MACHINERY

Niles-Bement-Pond Company—Continued.

RAILROAD MACHINERY.

36 in. car wheel borer, Niles.	90 in. extra heavy wheel lathe, Niles, motor.
42 in. car wheel lathe, Niles, belt or motor.	Niles double axle lathe.
46 in. car wheel lathe, Bement.	Bement double axle lathe.
70 in. single dr. wheel lathe, Sellers.	Putnam double axle lathe, ex. heavy.
Bement single axle lathe.	

MISCELLANEOUS.

Band saw, 30 in. Wright.	Grinder, wet, 20 in. Blount.
Bolt cutter, 1 in. Standard.	Punch, horiz., No. 4 Hilles & J., 12 in. throat, motor, capacity 1 5-16 in. 1 1/2 in.
Bolt header, 2 in. Blakeslee.	Punch & shear, dbl., Hilles & J., 30 in. throat, motor, cap. 1 1/2 in. 1 1/2 in.
Cut-off machines, 2 1/2 in. Betts.	Shears, 36 in. Queen City.
Cut-off machine, 4 1/2 in. Starr.	Tire bending rolls, 4 in. diam.
Cut-off saw, bar 16 in. diam.	
Folder, 30 in. Niagara.	
Grinder, drill, 3 in. Sellers.	
Grinder, univ., 10x20 in. Bath.	

FOR SALE BY

The Keagy & Lear Machine Co.,

Coshocton, Ohio

ENGINE AND BOILER.

One 16x42 in. Hamilton Corliss steam engine.
 One 150 h. p. horizontal tubular high-pressure boiler, 72 in.x18 ft., built by Erie City Boiler Works from Hartford Insurance Co.'s plans.
 Both can be seen in operation in our works. A bargain for some one if sold at once. Reason for selling, putting in gas engine.

FOR SALE BY

H. D. Warner,

Bristol, Conn.

Blanking press, double, Pittman, for large work, 30 in. bet. housings, weight of wheel about 2,000 lbs., weight of press 10,000 lbs. or over.....	\$450.00
Cam presses, straight side, with dial, weight about 1,800 lbs., (4) each.....	125.00
Chucking lathe, Springfield, taper att., 6-hole turret, 2 chucks, 1 1/2 in. hole in spindle, a modern, heavy tool.....	275.00
Cold saw, No. 12 Hugley.....	175.00
Cutting-off machine, 2 in. Pratt & Whitney.....	100.00
Cutting-off machine, 4 in. Pratt & Whitney.....	200.00
Drill grinder, Sellers, with thinning att., will grind from 5-16 to 3 in.....	125.00
Engine, crude oil, 60 h. p., with 45 k. w. generator, d. c.....	
Exhaust barrels, Sly, (4), sizes and prices on application.....	
Exhaust fan, 50 in. Sturtevant.....	85.00
Gear cutter, 48 in. spur and bevel hand machine, old, but worth several times the price.....	250.00
Generator, 45 k. w., 110 volt.....	450.00
Generator, 75 k. w., 220 volt, a. c., 3 phase.....	700.00
Hammer, helve, 40 lb. Bradley.....	250.00
Hydraulic broaching press, 30 ton W. & S.....	300.00
Hydraulic press, 250 ton, W. & S.....	400.00
Milling machines, plain, No. 4 Garvin, (3), each.....	100.00
Milling machines, Lincoln type, Garvin, (4), each.....	100.00
Motor, 40 h. p., 220 volt, a. c., 3 phase.....	450.00
Planer, 36x30 in. x16 ft. Pond, quality good.....	350.00
Plating dynamo, 1500 amperes, with exciter, A-1 condition.....	400.00
Ripsaw, Greenleaf, self feed, nearly new.....	150.00
Screw machines, No. 00B. & S. automatic, (6), each.....	150.00
Screw machines, No. 0 B. & S. automatic, (5), each.....	175.00
Shear, Pells, for cutting off cold stock up to 2 in. rounds, 1 1/2 in. squares, 1x6 in. flats.....	250.00
Swaging machine, 3 1/2 in. Dayton, nearly new.....	350.00
Wet tool grinders, 36 in. Horner, (2), each.....	100.00

SECOND-HAND MACHINERY

FOR SALE BY

**The H. A. Stocker Machinery Co., 566-72 W. Randolph St., Chicago
610 Merrill Building, Milwaukee, Wis.**

Something in this List ought to interest you. Let us know what it is.

LATHES.

- | | |
|--|---|
| 12x6 Davis (new, but reduced price). | 18x16 Whitcomb-Blaisdel, dbl. b. g. |
| 14x6 Hamilton, compound rest. | 21x10 Bradford, comp. rest, taper attachment, fine order. |
| 14x6 LeBlond, good order. | 22x10 Flather, c. r. and chuck. |
| 15x6 Von Wyck, c. r. and chuck. | 30x14 Fifield, compound rest. |
| 15x5 Star, chuck fitted. | 31x18 Bradford, c. r. and chuck. |
| 16x6 Bradford, compound rest. | 32x16 Davis, double back gears (new, reduced in price). |
| 16x6 Davis c. r. (new, reduced price.) | 39x12 Putnam, compound rest. |
| 16x6 L. & S., c. r., q. c. g. | |
| 20x12 Greaves & Klusman, comp. rest, turret on shears, chuck fitted. | |

SHAPERS.

- | | |
|-------------------------------------|---------------------------------|
| 14 in. Pratt & W., A. 1. condition. | 16 in. Walcott, little used. |
| 15 in. Hendy, like new. | 20 in. Cincinnati, back geared. |
| 16 in. Queen City, new, reduced pr. | 22 in. Walcott, triple geared. |

PLANERS.

- | | |
|---|-------------------------------------|
| 72x72x14 Niles, 4 heads, like new. | 32x32x10 Gray, 2 heads. |
| 44x48x20 Belmer, 4 heads, rebuilt. | 32x32x12 Ohio, 2 heads. |
| 44x44x12 Pond, 2 heads. | 32x32x8 Am. Tool Works, 1 head. |
| 40x38x14 Putnam, old style, low pr. | 30x30x12 Belmer, 2 heads. |
| 36x36x12 Gray, 2 heads. | 30x30x10 Flather, 3 heads. |
| 36x36x14 Belmer, 2 heads. | 26x26x8 Whitcomb (new, reduced pr.) |
| 36x36x10 Gray, 2 heads. | 22x22x5 Hendy. |
| 36x30x12 Sellers, old style, low price. | |

MILLING MACHINES.

- | | |
|---|------------------------------------|
| Rockford hand, vertical and slotting attachments. | No. 1 Kempsmith, b. g. universal. |
| No. 2 Waltham, bench. | No. 2 Brown & Sharpe, universal. |
| No. 13 Garvin, plain. | No. 3A Brown & Sharpe, universal. |
| No. 5 Garvin, plain back geared. | No. 2 Thurston die miller. |
| No. 2 Cincinnati pl. back geared. | No. 4 Becker, univ. (new, low pr.) |

UPRIGHT AND RADIAL DRILLS.

- | | |
|----------------------------------|--|
| 2½ ft. Fosdick National. | 38 in. New H. sl. hd., bk. gr., p. fd. |
| 3 ft. Fosdick standard. | 35 in. Blaisdel, sl. hd., bk. gr., p. fd. |
| 5 ft. arm Western, universal. | 28 in. Superior, b. g., p. f. & a. s. |
| 5 ft. Bickford, plain, gear box. | 25 in. Prentice Bros., sl. hd., b. g., p. f. |
| 4 ft. Bickford, plain cone. | 20 in. and smaller. |

SENSITIVE DRILLS.

1 to 6 spindles, various makes.

POWER PRESSES.

- | | |
|--|--|
| No. 1½ Bliss, cam drawing. | No. 4½ Am. Can. Co. large die space. |
| No. 3½ Bliss toggle press. | No. 3 American Can, o. b. i., 2 in. s. |
| Farrell reducing, 12 or 15 in. stroke. | No. 2 American Can, o. b. i., 2 in. s. |
| C82 Ferracute, armature notching. | No. 5 Niagara, o. b. i., good order. |
| C94 Ferracute, armature notching. | |

BORING MILLS—VERTICAL AND HORIZONTAL.

- | | |
|--------------------------|------------------------------------|
| 51 in. Niles, 2 heads. | Fitchburg horizontal, 36 in. swing |
| 10 in. Niles, 2 heads. | 34 in. Colburn, swivel turret. |
| 53 in. Colburn, 2 heads. | 42 in. Niles car wheel borer. |

BEMENT SINGLE END PUNCH AND SHEARS.

- | | |
|------------------------------------|--------------------------------------|
| 42 in. throat, capacity 4x1½ in. | Cincinnati sgl. end punch and shear, |
| Humphrey sgl. end punch and shear, | 8 in. throat, capacity 4x1 in. |
| 36 in. throat, capacity 1½x1 in. | |

SCREW MACHINES AND TURRET MACHINES.

- | | |
|---------------------------------|---|
| No. 2 Pratt & Whitney. | 3x36 Jones & Lamson. |
| No. 2½ Pratt & Whitney. | 22 in. Gisholt, fine condition. |
| No. 51 National-Acme automatic. | 24 in. Davis Machine Co. |
| 1-½ in. Cleveland automatic. | No. 3 Garvin screw machine. |
| 1-½ in. Cleveland automatic. | 14 turret lathes, small sizes, various makes. |
| 2½x26 Warner & Swazey. | |

SECOND-HAND MACHINERY

The H. A. Stocker Machinery Co.,—Continued.

MISCELLANEOUS.

Bolt cutter, 1½ in. Schlenker.	Gear hobbing machine, No. 6 S. & S.
Bolt header, 4 in.	Gear hobbing machine, No. 1 S. & S.
Centering machine, 4 in. Whiton.	Hammer, helve, 500 lb. Bradley.
Cold saw, No. 4 Birdsboro, 6 ex. saws.	Hammer, drop, 500 lb. National.
Crane, 30-ton Niles, 7½ ft. span.	Hydraulic press, 40 ton.
Gas furnace, No. 1 Stewart comb.	Hydraulic press, 100 ton with pump.
Gear cutter, 30 in. Flather.	Pipe machine, 4 in. Saunders.
Gear cutter, 50 in. Gould & E., auto.	Pipe machine, 4 in. Stoever.
Gear hobbing machine, Reynolds.	Riveter, 3-16 in. Add.

FOR SALE BY

Frevert Machinery Co.,

18 Dey St., New York City

Grinder, cutter, No. 1 Cincinnati, pl.	Planer, 24x24 in. x 8 ft. P. & W.
Grinder, surface, No. 2 B. & S., auto.	Press, No. 18 Bliss, inclined.
Grinder, wet tool, No. 2 Diamond.	Profiler, Garvin, 1 spindle.
Grindstone frame, on wheels, 48x6 in.	Screw mche., 13-32 in. B. & S., auto.
Miller, No. 2 Garvin Lincoln.	Screw machine., 7-16 in. Cleveland,
Miller, die, Thurston.	automatic.
Pinion and gear cutter, No. 1 Slate,	Shaper, crank, 18 in. Ohio.
automatic.	Turret lathe, 2x24 in. Jones & L.

FOR SALE BY

A. D. White Machinery Co.,

108-114 N. Jefferson St., Chicago

LATHES.

13x6 LeBlond, c. r.	18x8 American, latest pat.
13x6 Schellenbach, q. c. (2).	20x10 Fay & Scott, c. r.
16x6 Lodge & Shipley, q. c., ck.	24x12 Fay & Scott, like new.
16x8 Blaisdell	30x10 Powell.

DRILLS.

3 spindle Baker.	30 in. Kerkhoff, sliding head.
24 in. Blaisdell.	30 in. Bickford, sliding head.
28 in. Bickford, sliding head, (4).	32 in. Bickford, sliding head.
28 in. Aurora, sliding head.	3 ft. Bickford radial, cheap.

PLANERS.

24x 6 Gray, 1 head (2).	32x8 Betts, 1 head.
24x 6 Pond, 1 head.	36x10 Gray, 2 heads.
25x 6 Sellers, spiral drive.	36x12 Cincinnati, 2 heads.
26x 6 Gray, 1 head.	38x10 Gray, 1 head, fine.
26x 8 Gray, 1 head (2).	52x25 Betts, 1 head.
28x 8 Gray, 1 head (2).	

SCREW MACHINES AND TURRET LATHES.

16 in. No. 3 Pearson screw machine.	3 in. P. & W., automatic.
No. 2½ Pratt & Whitney sc. mche.	13 in. Drees turret lathe.
No. 3 Pratt & Whitney sc. mche.	16x5 Flather turret lathe.
¾ in. Cleveland, automatic.	18 in. Drees turret lathe.
¾ in. Pratt & Whitney, automatic (4).	18 in. D. & E., fr. hd., 2 step cone.
¾ in. Cleveland, semi automatic.	5½ in. belt turret lathe.

PUNCH PRESSES.

No. 2-A R. & K., inclinable.	No. 19 Bliss inc., (2).
No. 12 Wold, open back.	No. 58 Toledo, 6 in. stroke.
No. 40 Perkins, inc., 2 in. stroke.	

MISCELLANEOUS.

Boring and facing machine, No. 1 Beaman.	Hammer, 2,000 lb. American.
Die slotter, Garvin, like new.	Keyseater, No. 2 Catlin.
Gear cutter, No. 13 B. & S.	Keyseater, 16 in. Morton.
Grinder, cutter, H. G. Barr.	Miller, No. 1 B. & S. universal.
Hammer, power, 33 lb. Justice.	Miller, No. 6 Kempsmith universal.
Hammer, power, 50 lb. Dieneit.	Pipe machine, 6 in. Curtis.
Hammer, drop, 200 lb. Norton.	Shaper, 16 in. Smith & Mills.
	Shaper, 18 in. Henderson, b. g.

Are getting out new list, with prices that will surprise you. Write for it.

SECOND-HAND MACHINERY

FOR SALE BY

The Osborne & Sexton Machinery Co., . . . Columbus, Ohio.

LATHES.

14x 6 hol. spdl., comp. rest, (3).
15 in. Baker, turret, with slide rest.
16x10 Mueller, comp. rest, hol. spdl.

18x8, 10 & 12 Hamilton, h. s., c. r.
20x8&10 Hamilton, cab. legs, h.s., c.r.
30x18 New Haven.

PLANERS AND SHAPERS.

20 in. Gould & Eberhardt.
14 in. and 24 in. Hendy.
24 in. Queen City.

20x20x4 Industrial, single head.
24x24x6 Lodge & Davis, sgl. hd.
48x48x20 Belmer, 4 heads.

MISCELLANEOUS.

Boring mills, 8 & 9 ft. Betts, 3 hds.
Drill, 21 in. Superior, complete.
Drill, 24 in. Cincinnati, sta. head.
Gas engines, 10, 15, 25, 40 & 60 h. p.
Gas furnaces, Chicago, (2).
Grinder, surface, Brown & Sharpe.
Hammers, drop, 300, 600 and 3,000 lbs.
Hammers, helve, Schatz & Dayton.
Miller, Fox No. 2, vert. attachment.
Miller, Grand Rapids No. 1, plain.

Presses, foot, No. 1 Consolidated, (3).
Press, power, No. 0 Consolidated.
Press, inc., No. 21 Etna.
Press, No. 73½ Bliss.
Punch and shear, 18 in. single end, heavy.
Pyrometer, Hoskins electric, new.
Shovel blanking rolls, Toledo.
Slitting shear, Long & A.
Tapping mches., Webster & P., (2).

FOR SALE BY

J. J. McCabe,

30 Church St., New York City

LARGE TOOLS.

The enormous space needed by these Large Tools compels low prices for quick disposal.

Boring mill, upright, 14-20 ft. swing, extension type, 2 heads on crossrail, with motors, complete. Niles Tool Works, A 1 condition.
Boring mill, upright, 10 ft. swing, 2 heads, with motors, Pond M. T. Co.
Boring mill, upright, 7 ft. swing, 2 heads, belt drive, Niles Tool Works.
Lathe, 70 in. swing, 21 ft. bed, triple geared, Fitchburg.
Lathe, 52 in. swing, 32 ft. bed, triple geared, Putnam, A 1.
Lathe, 50 in. swing, 26 ft. bed, triple geared, raised from 28 in., Putnam.
Milling machine, planer type, 30 in.x9 ft. Niles Tool Works.
Multiple drill, 14-spindle, heavy, speed box type, Baush Co.
Planer, 120 in.x120 in.x18 ft., Niles, four heads.
Planer, 72 in.x72 in.x14 ft., Niles, four heads.
Planer, 72 in.x72 in.x26 ft., Pond M. T. Co., four heads.
Punch and shears, 48 in. throat (single) interchangeable, Hilles & J.
Radial drill, 7 ft. arm, half universal, swivel head, Bement.
Radial drill, 6 ft. arm, full universal, with motors, practically new.
Radial drill, 5½ ft. arm, plain, Prentice Bros. Co.
Turret lathe, 32 in. swing, heavy pattern, Gisholt (American) type.
Turret lathe, 24 in. swing, Gisholt, with chucks and tools.

OTHER TOOLS.

Other desirable tools chosen from our immense list.

Gear cutter, for spur gears up to 26 in., Brown & Sharpe.
Gear planer, for bevels up to 24 in., Gleason Co.
Milling machine, No. 1½ univ., vertical att., Brown & Sharpe.
Planer, 36 in.x36 in.x12 ft., two heads, Gray Co.
Radial drill, 4 ft. arm, speed box type, Prentice Bros. Co.
Turret lathe, 2x24, sliding head, latest, Jones & Lamson.
Universal grinder, No. 3, cap'y. 12x40 in., Brown & Sharpe.
Vertical turret lathe, 36 in., rapid production type, Bullard.
Railroad Tools, Boiler Shop Tools, Slotting Machines, Horizontal Boring Machines, Shapers, Hammers, Bolt and Nut Machines, etc.

NEW LATHES.

18 and 21 in. swing, double back gears, three step cone, with and without quick change gear box, absolutely new, at a big reduction from the new price while they last; write promptly and get your choice of any length bed.

SECOND-HAND MACHINERY

FOR SALE BY

Prentiss Tool & Supply Co., New York, Boston, Buffalo, Syracuse.

LATHES.

- | | |
|--|--|
| 9x44 Star, plain rest, p. c. f. | 26x22 New Haven, compound rest. |
| 12x 5 Prentice Bros., c. r., p. c. f. | 27x15 Lodge & Davis, c. r., p. c. f. |
| 14x 5 Reed, rise & fall, p. c. f. | 30x12 Johnson, c. r., p. c. f. |
| 14x 6 Putnam, compound rest, p. c. f. | 32x10 Powell, compound rest, |
| 16x 6 Porter, c. r., p. c. f. | 32x17 Bement triple geared, com- |
| 16x 8 Porter, c. r., p. c. f. | pound rest, p. c. f. |
| 16x 8 Bullard, compound rest, p. c. f. | 36x14 Lodge & Shipley, c. r., p. c. f. |
| 18x 6 Lodge & D., compound rest, | 38x16 Lodge & S., triple geared, |
| p. c. f., taper. | compound rest, p. c. f. |
| 18x 8 American, taper, c. r., p. c. f. | 38x16 Reed, compound rest, p. c. f. |
| 18x 8 Reed, c. r., p. c. f. | 38x20 Fay & Scott, compound rest. |
| 20x 8 McMahon, c. r., p. c. f., chuck. | 40x18 Newark, triple geared. |
| 20x 9 Pond, plain turning. | 46x38 Fitchburg, triple geared. |
| 20x10 Draper, c. r., p. c. f. | 54x20 compound rest, p. c. f. |
| 20x10 Fifield, compound rest, p. c. f. | 103x35 Bement, triple geared. |
| 26x12 Fish, compound rest, p. c. f. | 54 in. Niles wheel lathe. |
| 27x12 Pratt & Whitney, comp. rest. | 16 in. x10 ft. auto. threading lathe. |
| 30x12 Niles, c. r., p. c. f. | 60 in. Stevens pulley lathe. |

MILLERS.

- | | |
|-----------------------------------|------------------------------------|
| No. 15 Brainerd, universal. | No. 12 Brown & Sharpe, plain. |
| No. 4 Garvin, manufacturers type. | 8 ft. Beaman & Smith, planer type. |

DRILLS.

- | | |
|---------------------------------|--|
| 7 spindle Slate, gang. | 25 in. Snyder, sliding head, tap att. |
| Foot-Burt, high speed. | 3-spindle Barnes, gang. |
| Style F, 12 in. Baker Bros. | 36 in. Bickford radial, b. g., tap. att. |
| 4 spindle Foot-Burt, adj. rail. | 10 spindle Gardam, adjustable. |

SHAPERS.

- | | |
|------------------------------|--------------------------------------|
| 14 in. Lodge & Davis, crank. | 26 in. Lodge & Davis, shifting belt. |
| 18 in. Putnam, friction. | 21 in. Lodge & Davis, crank. |
| 20 in. Hendey, friction. | |

GEAR CUTTERS.

- | | |
|--------------------------------|---------------------------|
| 12 in. Gould & Eberhardt, hand | 72 in. Gould & Eberhardt. |
|--------------------------------|---------------------------|

SCREW MACHINES.

- | | |
|-----------------------------------|---------------------------------------|
| 7 in. No. 1 Garvin, wire feed. | No. 2 Warner & Swasey, wire feed. |
| 4 in. No. 52 National-Acme, auto. | 14x18 in. Pratt & Whitney. |
| 4, 1, 1, 1 & 2 in. P. & W., auto. | No. 6 2 in. W. & S., wire feed. |
| 2x24 Jones & Lamson. | 1 in. No. 3 Pratt & Whitney, wire fd. |
| 14 in. 4-spindle Gridley. | 4 in. Bardons & Oliver, wire feed. |

PLANERS.

- | | |
|-----------------------------------|-----------------------------|
| 15x15x 3 Pratt & Whitney, 1 head. | 32x32x 8 Flather, 1 head. |
| 22x22x 4 Powell, 1 head. | 38x38x 8 Gleason, 1 head. |
| 24x24x 6 Pease, 1 head. | 48x42x 8 Farrel, 1 head. |
| 33x33x 8 Betts, 1 head. | 48x48x15 Pond, three heads. |
| 30x30x10 Gleason, 1 head. | 60x60x12 New Haven, 1 head. |

HAMMERS.

- | | |
|--------------------------|------------------------------|
| 25 lb. Dupont, trip. | 200 lb. American, steam. |
| 50 lb. Bradley, compact. | 400 lbs. Stiles, board drop. |

MISCELLANEOUS.

- | | |
|---------------------------------------|-------------------------------------|
| Boring mill, No. 2 Betts, horizontal. | Pipe machine, 4 in. Saunders. |
| Boring mill, 10 ft. Pond. | Press, No. 4 Mossberg & G., inc. |
| Boring mill, vert., 50 in., Niles. | Punch & Shear, No. 6 Royersford. |
| Boring mill, vert., 62 in. Bullard. | Saw, No. 5 Cochrane-Bly. |
| Cylinder borer, Beaman & Smith. | Shear, hand, 9 in. blade, heavy. |
| Engine, gasoline, 8 h. p., Fairbanks. | Slotter, 13 in. Bement. |
| Fan, exhaust, 50 in. Buffalo. | Slotter, 16 in. Bement, crank. |
| Grinder, plain, 12x42 Landis. | Tumbling barrel, 36x24 Smith. |
| Grinder, surface, Walker. | Welding outfit, acetylene, Sanford. |

Send for latest complete List.

SECOND-HAND MACHINERY

FOR SALE BY

O. L. Packard Machinery Co., Chicago, Ill., and Milwaukee, Wis.

LATHES.

11x4 Star, good order.....	\$ 140.
16x8 Johnson, compound rest.....	150.
18x6 American, standard, c. p. r., power cross fd., hol. spindle.....	275.
18x6 LeBlond, heavy, c. r., turret on carriage.....	450.
28x12 American, 2 sets raising blocks.....	750.
72x22 comp. rest, with raising blocks to swing 120 in.....	1000.
15 in. turret lathe.....	150.

PLANERS.

24x24x5, 2 heads on cross rail.....	\$525.
36x36x12.....	\$850.

MISCELLANEOUS.

Bevel shear, Thomson, 8 in. boiler plate.....	\$ 100.
Bolt cutter, 1 in. Acme.....	110.
Boring mill, 30 in. Bullard, full universal, 4 hole turret on spindle.....	950.
Drill press, 24 in. Barnes, back gd., stationary hd., w. and l.....	75.
Lathe, 15 in. Garvin Monitor.....	250.
Milling machine, universal, No. 4 Cincinnati, old style.....	500.
Pipe machine, No. 8 Merrell.....	300.
Press, No. 40 Perkins, used 30 days.....	190.
Punch presses, inclinable, No. 30 Perkins, (2).....	each 105.
Screw machine, 4 in. P. & W., automatic.....	375.
Shaper, 14 in. Steptoe, crank.....	175.
Shaper, 2 spindle, wood top, good order.....	50.
Spinning lathe, 16x5.....	45.

FOR SALE BY

E. G. Eldridge, 566 Washington Blvd., Chicago, Ill.

Rock Bottom Prices on the Following:

DRILLS.

3 spindle sensitive gang, (4).....	2½ ft. Drees latest model radial drill, brand new, at second hand price.
4 spindle W. & R. sensitive gang.....	3 ft. American practically new b. g. radial, tap, attach.
20 in. Barnes b. g. p. f., nearly new.....	Twenty (20) other drill presses.
24 in. I. & D. b. g. p. f. sliding hd.....	
25 in. P. & W. p. f. sliding head.....	

ENGINE LATHES.

11 in.x 4 ft. Starr eng. lathe with compound rest, oil pan and chuck fitted.....	
12 in.x 5 ft. Reed engine lathe.....	
12 in.x 6 ft. Reed engine lathe.....	
12 in.x 5 ft. Pratt & Whitney tool room lathe, with draw-in attachment, taper attachment, tool cabinet, etc., complete.....	
14 in.x5 ft. Hendy quick change gear tool room lathe, with oil pan.....	
14 in.-16 in.x6 ft. Hamilton, q. c. of feed, eng. lathe, nearly new.....	
16 in.-18 in.x8 ft. Milwaukee, q. c. of feed, eng. lathe and chuck, nearly new.....	
18 in.x6 ft. Bradford eng. lathe, nearly new.....	
20 in.x10 ft. Porter eng. lathe, with 1½ in. h. s., compound rest, complete, overhauled, in A No. 1 condition.....	
24 in.x12 ft. American modern heavy type eng. lathe, with taper attachment, in A No. 1 condition, and 20 in. chuck.....	
28 in.x10 ft. Putnam heavy eng. lathe, fine running order.....	

SCREW MACHINES.

7-16 in. P. & W. hand screw machine, with 4 collets, complete.....	
No. 1 B. & S. ½ in. w. f. cap. semi-automatic hand screw machine, fine order.....	
4-½ in. Cleveland plain automatic, with extra equipment, nearly new.....	
No. 140 Wells ½ in. w. f. cap., A No. 1 condition.....	
No. 5 Windsor, 2 in. w. f. cap., g. f. h., complete, overhauled.....	
2½ in. bar cap. Foster flat turret lathe, complete bar equipment, nearly new.....	

MISCELLANEOUS.

Eighty-nine (89) other machines of various kinds. All fully described in our new list just out. Write for copy. Will buy your machinery or entire shop. Our motto is "Satisfaction Guaranteed".

SECOND-HAND MACHINERY

FOR SALE BY

Rumely-Wachs Machinery Co., 121 N. Jefferson St., Chicago, Ill.

LATHES.

11x4 Barnes.
12x54 in. foot power speed lathe.
14x6 Perkins.
14x6 Silk.
14x6 W. P. Davis.
14x8 Lodge & S., quick change gear.
16x6 Porter.
16x6 Lodge & S., quick change gear.
16x6 LeBlond, standard.
16x8 Fitchburg.
16x10 Blaisdell.

18x8 Schumacher & Boye.
20x8 Fifield.
20x30x8 Harrington gap lathe.
21x10 Lodge & Davis.
24x8 Putnam.
24x10 LeBlond, standard.
24x12 New Haven.
24x24 Fifield.
28x12 New Haven.
30x12 LeBlond, quick change gear.
36x14 Fifield.

UPRIGHT DRILLS.

3 spindle Reed.
3 spindle Woodward & Rogers.
4 spindle National turret.
14 spindle horiz. mult. spdl., 1 1/2 in. cap.
18 in. Baker Bros.
20 in. Barnes, lever feed.

24 in. Aurora, sliding hd., complete.
24 in. Lodge & D., sl. hd., complete.
24 in. Schumacher, complete.
34 in. Barnes, sliding hd., complete.
40 in. Lodge & D., sl. hd., complete.

RADIAL DRILLS.

3 ft. Bickford pl. radial, cone drive.
30 in. Mueller, speed box drive.

5 ft. Niles semi universal.

PLANERS.

17x17x4 Hendey.
22x22x4 Pratt & Whitney.
22x22x5 Wheeler.
24x24x5 Pease.

30x30x8 Putnam.
36x36x15 Powell.
16 in. Lathe & Morse crank planer.

TURRET

LATHES.

7 in. Pratt & Whitney screw machine, late pattern.
No. 2 Pratt & W. screw machine.
No. 1 Pratt & W. screw machine.
1 1/2 in. Pratt & Whitney screw machine, late pattern.
15x6 Lodge & Davis Fox Monitor.

No. 2 1/2 Pratt & Whitney screw machine, 2 in. capacity.
18x6 Fox, square arbor.
18 in. American.
21 in. Gisholt.
24 in. American.

HORIZONTAL BORING MILLS.

Niles, 2 1/2 in. bar, 4 ft. table.

MILLERS.

No. 3 LeBlond, plain, all feeds.
No. 2 LeBlond, plain.
No. 1 Cincinnati, plain.

No. 16 Garvin, plain.
No. 1 Pratt & Whitney, power.
No. 6 Whitney hand miller.

SHAPERS.

14 in. Steptoe crank shaper.
18 in. Barker crank shaper.
16 in. Smith & Mills crank shaper.

16 in. Acme back gd. crank shaper.
22 in. Walcott.

GRINDERS.

LeBlond, cutter and reamer.
No. 22 Landis, plain, 12x32 in.
No. 20 Landis, plain, 10x20 in.

18x96 in. Landis, plain.
Gisholt, universal tool.
No. 2 Landis, universal, 12x30 in.

PUNCH PRESSES AND SHEARS.

No. 19 Bliss, open back, inclinable.
No. 0 Walsh, open back, inclinable.
No. 30 "A" Perkins, open bk. inc.
No. 15 Buffalo ind. hand punch.
No. 5 Aurora hand punch.

20 in. Peck, Stow & W. shear.
No. 381 Toledo rotary splitting shear, motor drive.
Drombacker hand lever splitting shear.

MISCELLANEOUS.

Bolt cutter, 2 1/2 in. National.
Cutting-off machine, 4 1/2 in. P. & W.
Drill, portable, No. 3 Dallett.
Drill, portable, No. 4 Dallett.
Hammer, drop, 75 lb. Bliss, with lifter.
Hammer, steam, 400-lb. American.

Pipe machine, 4 in. Bignall & K.
Saw table, Colburn.
Screw machine, 7 in. B. & S., auto.
Screw press, Bliss.
Screw slotter, National-Acme.
Tapping machine, No. 2 Garvin.
Thread rolling machine, 2 in. Acme.

SECOND-HAND MACHINERY

FOR SALE BY

Nazel Engineering & Machine Works,

Philadelphia, Pa.

Boring mill, 42 in. horizontal, Bement.
Boring mill, 14 ft. vertical, Bement, 2 heads.
Lathes, 48 in.x16 ft. Harrington.
Lathes, 20 in.x16 ft. I. H. Johnson.
Lathes, 24 in.x20 ft. Bement.
Planer, 26 in.x10 ft. Putnam.
Planer, 20 in.x6 ft. Sellers.
Planer, 60 in.x20 ft. Bement, 2 heads.

FOR SALE BY

Chas. A. Strelinger & Co., Bates & Congress Sts., Detroit, Mich.

USED TOOLS.

Drills, 4-spindle gang, 23 in. Rockford, (3).
Lathe, 16 in.x8 ft. Fitchburg, taper attachment.
Lathe, 16 in.x8 ft. Wolcott, geared feed.
Lathe, 20-24 in.x8 ft. Blaisdell, taper attachment.
Miller, hand, Burke, small.
Miller, No. 3 Owen, plain.
Planer, 36x36 in.x12 ft. Whitcomb, motor drive.
Turret lathes, 14 in. Foster and Kimball, plain head, (3).

FOR SALE BY

Western Machinery Co., 6th and Baymiller Sts., Cincinnati, Ohio.

PLANERS.

We have at Troy, Ohio, a 32 in. single head Geneva planer, widened to 36 in., 10 ft. table, free from breaks and in good condition; price for quick cash sale, \$275.; must be moved at once. Also the following Planers in stock:
24 in.x5 ft. New Haven. | 42 in.x16 ft. Industrial.
24 in.x6 ft. Gray. | 78 in.x15 ft. New Albany stone
26 in.x8 ft. Pratt & Whitney. | planer, 4 heads.

MISCELLANEOUS.

Gas engines, 4, 8 & 20 h. p. | Lathes, from 12 in.x5 ft. swing to 26
Motors, alt. and d. c. | in.x26 ft. swing.

Also a large stock of other machine tools and machinery. Send us list of your requirements.

FOR SALE BY

The Randle Machinery Co., 1739 Powers St., Cincinnati, O.

BOILERS.

Horiz. tubular, from 6 to 150 h. p.
Fire box, from 8 to 80 h. p.
Vertical, from 3 to 50 h. p.

ENGINES.

Corliss, from 50 to 350 h. p.
Automatic, from 15 to 180 h. p.
Throttling, from 5 to 225 h. p.

LATHES.

60 in. Stevens pulley.
15 in. x6 ft. LeBlond screw cutting.

ELECTRIC GENERATORS.

30 k. w., direct connected.
20 k. w., direct connected.
18 k. w., belted.

MOTORS.

All sizes and kinds.

PLANER.

36x36 Gray.

AIR COMPRESSOR.

8x6x9 locomotive type.

BLOWER.

No. 5 Sturtevant.

MISCELLANEOUS.

Heaters, tanks, pumps, exhausters, electrical saw mill and general machinery.

Write for list. Also a full assortment of new machinery.

Sole manufacturers of the celebrated "Leader" Injectors and Jet Pumps.

SECOND-HAND MACHINERY

FOR SALE BY

Frank Toomey, Inc.,

127 N. Third St., Philadelphia, Pa.

HAMMERS AND RADIAL DRILLS.

800 lb. Bement Miles & Co., single frame hammer.
1600 lb. Chambersburg, guided rod, single frame, steam hammer.

36 in. Bickford radial drill.
36 in. Morris radial drill.
48 in. Gang radial drills, (2).

LATHES.

14x5 Hendey.
14x6 Hendey.
14x7 Lodge & S., geared head.
16x6 Prentice.
16x6 Davis, (3).

16x8 Bradford quick change gear.
18x10 Schumacher & Boye, taper attachment.
19x12 Pond.
Foster & Kimball turret, (several).

MISCELLANEOUS.

Boring mill, 36 in. Bridgeport, sgl. hd.
Boring mill, 60 in., single head.
Grinder, oscillating surface, Springfield No. 5.
Miller, No. 2 Van Norman duplex.
Miller, slab, 36 in x 12 ft., heavy.
Miller, vertical, No. 22 Garvin.

Miller, No. 5B. B. & S., with centers and vertical attachment.
Planer, 26x26x6 Niles (2).
Planer, 33x33x12 Woodward & Powell.
Press, PG-5 Ferracute.
Turret lathes, No. 14 Garvin (2).

FOR SALE BY

The Lake Erie Nail & Supply Co., (Machinery Dept.)
408-412 Frankfort Ave., N. W.

Cleveland, Ohio

LATHES.

14x 6 Monarch, c. r., hol. spdl., (2).
16x 6 Johnson, c. r., hol. spdl., (2).
18x 8 Draper, c. r., hol. spdl.
18x 8 Monarch, q. c., hol. spdl., c. r.

24x16 Gleason, plain rest, chuck.
36x22 Sellers, triple geared.
24x36 Pittsburg, gap.
18-36x8 Fay & Scott, with turret.

TURRET LATHES.

No. 3 Bardons & Oliver, auto. chuck, cut off rest, (3).

16 in. Springfield Fox, lathe.
22 in. Bullard, turret lathe, complete.

SHAPERS.

16 in. Hendy, geared.
24 in. Hendy, geared.

24 in. Rockford, crank.

DRILLS.

14 in. Miami Valley, sensitive.
14 in. Reed, 4-spindle high speed sensitive.
20 in. Sibley & Ware, wheel and lever feed, (2).
24 in. W. F. & Jno. Barnes, sliding head, back gears, auto. stop.

24 in. Sibley & Ware, sliding head, back geared, auto. stop, tapping att.
36 in. Baker Bros., complete, (2).
30 in. Midland, high speed radials, with tapping attachment, (2).
Foote-Burt multiple spindle, (3).
Gardam multiple spindle.

PLANERS.

26x26x 6 Putnam, 1 head.
33x33x10 Putnam, 1 head.

48x48x20 Belmar, 4 heads.
60x60x16 Putnam, 2 heads.

MILLING MACHINES.

No. 1 Garvin, hand.
No. 20 Oesterlein, plain.

No. 2 Grand Rapids, plain.

NUT TAPPERS AND BOLT CUTTERS.

1 1/2 in. Acme 6-spindle nut tapper.
1 in. Acme 6-spindle nut tapper.
2 in. Reliance single spdl. bolt cutter.

1 1/2 in. Acme single spindle bolt cutter, motor drive.
2 in. Acme 3-spindle bolt cutter.

PRESSES.

No. 58 Toledo, geared.
No. 73 Bliss, geared.

No. 73 Bliss, plain.
No. 3 inclinable press, 2 in. stroke.

MISCELLANEOUS.

Band saws, metal, (2).
Broaching machine, No. 3171 Waterbury-Farrel.
Gas engine, 6 h. p. Buckeye.
Gas engine, 15 h. p. Kenton.
Generator, Coles, 60 light, d. c.

Gear cutter, spur, 30x8 in. Gould & Eberhardt auto.
Grinder, angle and face.
Grinder, wet tool, 24 in. Leland.
Keyseat miller, Ingersoll.
Pipe machine, 4 in. Oster.

SECOND-HAND MACHINERY

FOR SALE BY

Burke Machine Tool Co., - - - - - **Conneaut, Ohio**

HAND SHAPERS.

New 7½ in. stroke hand shapers, built to sell at \$100., for sale at \$50.

FOR SALE BY

McCoy & Braadt, - - - - - **410 House Building, Pittsburg, Pa.**

LATHES.

14x60 in., 36 in. centers.	36 in.x8 ft. New Haven, 4 ft. centers.
16 in.x8 ft. New Haven, 18 in. chuck.	60 in.x17ft. 8 in. N. H., 18 ft. centers.
21 in.x10 ft. Johnston, b. g., h. s.	2x24 in. Jones & Lamson turret.
28 in.x13 ft. 6 in. New H., h. s. b. g.	No. 2 Warner & Swasey turret.

PLANERS AND SHAPERS.

16 in. Steptoe shaper.	36x36x10 Ohio planer.
20 in. Pratt & Whitney shaper.	36x36x10 Sellers planer.
24 in. Gould & Eberhardt shaper.	42x42x15 New Haven planer.
36x36x8 Powell planer.	60x60x16 Powell planer.

MISCELLANEOUS.

Boring lathe, horiz., 36 in. Streit.	Hub borer, 50 in. Niles.
Compressor, belted, 10x12 in. Chicago.	Motor, 25 h. p. Crocker-Wheeler,
Drill, 24 in. Bickford.	250 v.
Drill, 24 in. Prentiss.	Motor, variable speed, 7½ h. p. West-
Drill, 26 in. Barnes.	inghouse, a. c.
Hammer, steam, 600 lb., double leg.	Nut tapper, 4 spindle.
Hammer, steam, 800 lb. Morgan.	Press, power, 160 ton. Morgan.
Hammer, steam, 900 lbs. Niles.	Radial, plain, 36 in. Dreses.

In revising our manufacturing equipment, we find the following first class Used Machine Tools, which we offer at attractive prices:

ENGINE LATHES

16x 6 Hendey, q. c. g.
16x 6 Pratt & Whitney, q. c. g.
16x 8 Reed
18x 8 Lodge & Shipley, q. c. g.
18x10 Lodge & Shipley, q. c. g.
20x 8 Lodge & Shipley, q. c. g.
20x10 Lodge & Shipley, q. c. g.
24x 8 Lodge & Shipley, q. c. g.
24x10 Lodge & Shipley, q. c. g.
36x12 Lodge & Shipley, q. c. g.
36x14 New Haven

SPECIAL LATHES

24x7 Lodge & S. chucking lathe,
No. 3 Lodge & Shipley rapid
reduction lathe

METAL SAWS

No. 3 Nutter-Barnes cold saw
Franklin cold saw, 3½ in. cap.
Globe power hack saw, 8 in. cap.

MISCELLANEOUS

Mumford 12x40 molding mach.

*Write for complete description with prices of machines
in which you are interested*

The Lodge & Shipley Machine Tool Co.
CINCINNATI, OHIO, U. S. A.

New Tools **at** **Bargain Prices**

- 1—16x 6 Style A Hamilton Lathe
- 1—18x10 Fay & Scott Lathe
- 1—12 in. Hamilton Sensitive Drill
- 1—16 in. “ “ “
- 1—20 in. Sibley Plain Lever “
- 1—22½ in. Sibley Drill Complete
- 1—10 ft.-12 ga. Power Brake

Do you want them?

We desire to dispose of the above
in order to devote all our energies to

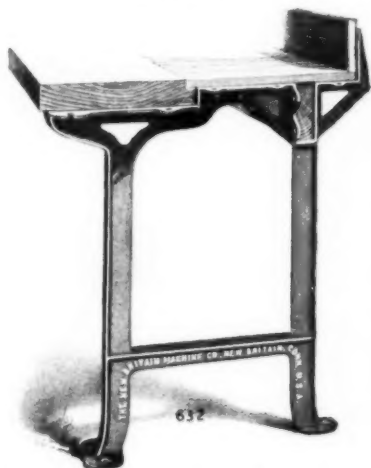
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